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Published

(54) Title: HUMAN SIGNAL PEPTIDE-CONTAINING PROTEINS

(54) Titre: PROTEINES CONTENANT UN PEPTIDE SIGNAL HUMAIN

## (57) Abstract

The invention provides human signal peptide-containing proteins (HSPP) and polynucleotides which identify and encode HSPP. The invention also provides expression vectors, host cells, antibodies, agonists, and antagonists. The invention also provides methods for diagnosing, treating, or preventing disorders associated with expression of HSPP.

## (57) Abrégé

L'invention concerne des protéines contenant un peptide signal humain (HSPP) et des polynucléotides identifiant et codant HSPP. L'invention concerne également des vecteurs d'expression, des cellules hôtes, des anticorps, des agonistes et des antagonistes. L'invention concerne en outre des méthodes de diagnostic, de traitement ou de prévention de troubles associés à l'expression de HSPP.

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<b>(21) International Application Number:</b> PCT/US99/14484 <b>(22) International Filing Date:</b> 25 June 1999 (25.06.99)  <b>(30) Priority Data:</b> 60/090,762 26 June 1998 (26.06.98) US 60/094,983 31 July 1998 (31.07.98) US 60/102,686 1 October 1998 (01.10.98) US 60/112,129 11 December 1998 (11.12.98) US  <b>(63) Related by Continuation (CON) or Continuation-in-Part (CIP) to Earlier Applications</b> US 60/090,762 (CIP) Filed on 26 June 1998 (26.06.98) US 60/094,983 (CIP) Filed on 31 July 1998 (31.07.98) US 60/102,686 (CIP) Filed on 1 October 1998 (01.10.98) US 60/112,129 (CIP) Filed on 11 December 1998 (11.12.98)  <b>(71) Applicant (for all designated States except US):</b> INCYTE PHARMACEUTICALS, INC. [US/US]; 3174 Porter Drive, Palo Alto, CA 94304 (US).		<b>(72) Inventors; and</b> <b>(75) Inventors/Applicants (for US only):</b> LAL, Preeti [IN/US]; 2382 Lass Drive, Santa Clara, CA 95054 (US). TANG, Y., Tom [CN/US]; 4230 Ranwick Court, San Jose, CA 95118 (US). GORGONE, Gina, A. [US/US]; 1253 Pinecrest Drive, Boulder Creek, CA 95006 (US). CORLEY, Neil, C. [US/US]; 1240 Dale Avenue #30, Mountain View, CA 94040 (US). GUEGLER, Karl, J. [CH/US]; 1048 Oakland Avenue, Menlo Park, CA 94025 (US). BAUGHN, Mariah, R. [US/US]; 14244 Santiago Road, San Leandro, CA 94577 (US). AKERBLOM, Ingrid, E. [US/US]; 1234 Johnson Street, Redwood City, CA 94061 (US). AU-YOUNG, Janice [US/US]; 1419 Kains Avenue, Berkeley, CA 94702 (US). YUE, Henry [US/US]; 826 Lois Avenue, Sunnyvale, CA 94087 (US). PATTERSON, Chandra [US/US]; 490 Sherwood Way #1, Menlo Park, CA 94025 (US). REDDY, Roopa [IN/US]; 1233 W. McKinley Drive, Sunnyvale, CA 94086 (US). HILLMAN, Jennifer, L. [US/US]; 230 Monroe Drive #12, Mountain View, CA 94040 (US). BANDMAN, Olga [US/US]; 366 Anna Avenue, Mountain View, CA 94043 (US).  <b>(74) Agents:</b> BILLINGS, Lucy, J. et al.; Incyte Pharmaceuticals, Inc., 3174 Porter Drive, Palo Alto, CA 94304 (US).  <b>(81) Designated States:</b> AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).  <b>Published</b> <i>Without international search report and to be republished upon receipt of that report.</i>	
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## HUMAN SIGNAL PEPTIDE-CONTAINING PROTEINS

### TECHNICAL FIELD

This invention relates to nucleic acid and amino acid sequences of human signal peptide-containing proteins and to the use of these sequences in the diagnosis, treatment, and prevention of cell proliferative disorders including cancer; inflammation; and cardiovascular, neurological, reproductive, and developmental disorders.

### BACKGROUND OF THE INVENTION

Protein transport is essential for cellular function. Transport of a protein may be mediated by a signal peptide located at the amino terminus of the protein itself. The signal peptide is comprised of about ten to twenty hydrophobic amino acids which target the nascent protein from the ribosome to a particular membrane bound compartment such as the endoplasmic reticulum (ER). Proteins targeted to the ER may either proceed through the secretory pathway or remain in any of the secretory organelles such as the ER, Golgi apparatus, or lysosomes. Proteins that transit through the secretory pathway are either secreted into the extracellular space or retained in the plasma membrane. Secreted proteins are often synthesized as inactive precursors that are activated by post-translational processing events during transit through the secretory pathway. Such events include glycosylation, phosphorylation, proteolysis, and removal of the signal peptide by a signal peptidase. Other events that may occur during protein transport include chaperone-dependent unfolding and folding of the nascent protein and interaction of the protein with a receptor or pore complex. Examples of secreted proteins with amino terminal signal peptides are discussed below and include receptors, extracellular matrix molecules, cytokines, hormones, growth and differentiation factors, neuropeptides, vasomediators, phosphokinases, phosphatases, phospholipases, phosphodiesterases, G and Ras-related proteins, ion channels, transporters/pumps, proteases, and transcription factors. (Reviewed in Alberts, B. et al. (1994) Molecular Biology of The Cell, Garland Publishing, New York, NY, pp. 557-560, 582-592.)

5 G-protein coupled receptors (GPCRs) comprise a superfamily of integral  
membrane proteins which transduce extracellular signals. GPCRs include receptors for  
biogenic amines such as dopamine, epinephrine, histamine, glutamate (metabotropic  
10 effect), acetylcholine (muscarinic effect), and serotonin; for lipid mediators of  
inflammation such as prostaglandins, platelet activating factor, and leukotrienes; for  
peptide hormones such as calcitonin, C5a anaphylatoxin, follicle stimulating hormone,  
gonadotropin releasing hormone, neurokinin, oxytocin, and thrombin; and for sensory  
15 signal mediators such as retinal photopigments and olfactory stimulatory molecules. The  
structure of these highly conserved receptors consists of seven hydrophobic  
transmembrane regions, cysteine disulfide bridges between the second and third  
extracellular loops, an extracellular N-terminus, and a cytoplasmic C-terminus. The  
20 N-terminus interacts with ligands, the disulfide bridges interact with agonists and  
antagonists, and the large third intracellular loop interacts with G proteins to activate  
second messengers such as cyclic AMP, phospholipase C, inositol triphosphate, or ion  
25 channels. (Reviewed in Watson, S. and Arkinstall, S. (1994) The G-protein Linked  
Receptor Facts Book, Academic Press, San Diego, CA, pp. 2-6; and Bolander, F.F. (1994)  
Molecular Endocrinology, Academic Press, San Diego, CA, pp. 162-176.)

30 Other types of receptors include cell surface antigens identified on leukocytic cells  
of the immune system. These antigens have been identified using systematic, monoclonal  
antibody (mAb)-based "shot gun" techniques. These techniques have resulted in the  
production of hundreds of mAbs directed against unknown cell surface leukocytic  
35 antigens. These antigens have been grouped into "clusters of differentiation" based on  
common immunocytochemical localization patterns in various differentiated and  
undifferentiated leukocytic cell types. Antigens in a given cluster are presumed to identify  
a single cell surface protein and are assigned a "CD" number. Some of the genes encoding  
40 proteins identified by CD antigens have been isolated and characterized as both  
transmembrane proteins and cell surface proteins anchored to the plasma membrane via  
covalent attachment to fatty acid-containing glycolipids such as  
glycosylphosphatidylinositol (GPI). (Reviewed in Barclay, A. N. et al. (1993) The  
45 Leucocyte Antigen Facts Book, Academic Press, San Diego, CA, pp. 144-145; Noel, L. S.  
et al. (1998) J. Biol. Chem. 273:3878-3883.)

50 Tetraspanins are a superfamily of membrane proteins which facilitate the formation

5 and stability of cell-surface signaling complexes containing lineage-specific proteins,  
integrins, and other tetraspanins. They are involved in cell activation, proliferation  
(including cancer), differentiation, adhesion, and motility. These proteins cross the  
10 membrane four times, have conserved intracellular – and C-termini and an extracellular,  
5 non-conserved hydrophilic domain. Tetraspanins include, e.g., platelet and endothelial  
cell membrane proteins, leukocyte surface proteins, tissue specific and tumorous antigens,  
and the retinitis pigmentosa-associated gene peripherin. (Maecker, H.T. et al. (1997)  
15 FASEB J. 11:428-442.)

Matrix proteins (MPs) are transmembrane and extracellular proteins which  
10 function in formation, growth, remodeling, and maintenance of tissues and as important  
mediators and regulators of the inflammatory response. The expression and balance of  
20 MPs may be perturbed by biochemical changes that result from congenital, epigenetic, or  
infectious diseases. In addition, MPs affect leukocyte migration, proliferation,  
differentiation, and activation in the immune response. MPs are frequently characterized  
25 by the presence of one or more domains which may include collagen-like domains, EGF-  
like domains, immunoglobulin-like domains, and fibronectin-like domains. In addition,  
some MPs are heavily glycosylated. MPs include extracellular proteins such as  
30 fibronectin, collagen, and galectin and cell adhesion receptors such as cell adhesion  
molecules (CAMs), cadherins, and integrins. (Reviewed in Ayad, S. et al. (1994) The  
20 Extracellular Matrix Facts Book, Academic Press, San Diego, CA, pp. 2-16; Ruoslahti, E.  
(1997) *Kidney Int.* 51:1413-1417; Sjaastad, M.D. and Nelson, W.J. (1997) *BioEssays*  
35 19:47-55.)

Lectins are proteins characterized by their ability to bind carbohydrates on cell  
membranes by means of discrete, modular carbohydrate recognition domains, CRDs.  
25 (Kishore, U. et al. (1997) *Matrix Biol.* 15:583-592.) Certain cytokines and membrane-  
spanning proteins have CRDs which may enhance interactions with extracellular or  
40 intracellular ligands, with proteins in secretory pathways, or with molecules in signal  
transduction pathways. The lipocalin superfamily constitutes a phylogenetically  
45 conserved group of more than forty proteins that function by binding to and transporting a  
30 variety of physiologically important ligands. (Tanaka, T. et al. (1997) *J. Biol. Chem.*  
272:15789-15795; and van't Hof, W. et al. (1997) *J. Biol. Chem.* 272:1837-1841.)  
50 Selectins are a family of calcium ion-dependent lectins expressed on inflamed vascular

5 endothelium and the surface of some leukocytes. (Rossiter, H. et al. (1997) Mol. Med. Today 3:214-222.)

Protein kinases regulate many different cell proliferation, differentiation, and signaling processes by adding phosphate groups to proteins. Reversible protein phosphorylation is a key strategy for controlling protein functional activity in eukaryotic cells. The high energy phosphate which drives this activation is generally transferred from adenosine triphosphate molecules (ATP) to a particular protein by protein kinases and removed from that protein by protein phosphatases. Phosphorylation occurs in response to extracellular signals, cell cycle checkpoints, and environmental or nutritional stresses. Protein kinases may be roughly divided into two groups; protein tyrosine kinases (PTKs) which phosphorylate tyrosine residues, and serine/threonine kinases (STKs) which phosphorylate serine or threonine residues. A few protein kinases have dual specificity. A majority of kinases contain a similar 250-300 amino acid catalytic domain. (Hardie, G. and Hanks, S. (1995) The Protein Kinase Facts Book, Vol I, pp. 7-47, Academic Press, San Diego, CA.)

Protein phosphatases remove phosphate groups from molecules previously modified by protein kinases thus participating in cell signaling, proliferation, differentiation, contacts, and oncogenesis. Protein phosphorylation is a key strategy used to control protein functional activity in eukaryotic cells. The high energy phosphate is transferred from ATP to a protein by protein kinases and removed by protein phosphatases. There appear to be three, evolutionarily-distinct protein phosphatase gene families: protein phosphatases (PPs); protein tyrosine phosphatases (PTPs); and acid/alkaline phosphatases (APs). PPs dephosphorylate phosphoserine/threonine residues and are an important regulator of many cAMP mediated, hormone responses in cells. PTPs reverse the effects of protein tyrosine kinases and therefore play a significant role in cell cycle and cell signaling processes. Although APs dephosphorylate substrates in vitro, their role in vivo is not well known. (Charbonneau, H. and Tonks, N.K. (1992) Annu. Rev. Cell Biol. 8:463-493.)

Cyclic nucleotides (cAMP and cGMP) function as intracellular second messengers to transduce a variety of extracellular signals, including hormones, light and neurotransmitters. Cyclic nucleotide phosphodiesterases (PDEs) degrade cyclic nucleotides to their corresponding monophosphates, thereby regulating the intracellular

5 concentrations of cyclic nucleotides and their effects on signal transduction. At least  
seven families of mammalian PDEs have been identified based on substrate specificity and  
affinity, sensitivity to cofactors and sensitivity to inhibitory drugs. (Beavo, J.A. (1995)  
10 Physiological Reviews 75: 725-748.)

5 Phospholipases (PLs) are enzymes that catalyze the removal of fatty acid residues  
from phosphoglycerides. PLs play an important role in transmembrane signal transduction  
and are named according to the specific ester bond in phosphoglycerides that is  
15 hydrolyzed, i.e., A<sub>1</sub>, A<sub>2</sub>, C or D. PLA<sub>2</sub> cleaves the ester bond at position 2 of the glycerol  
moiety of membrane phospholipids giving rise to arachidonic acid. Arachidonic acid is  
10 the common precursor to four major classes of eicosanoids, namely prostaglandins,  
prostaglandins, thromboxanes and leukotrienes. Eicosanoids are signaling molecules  
involved in the contraction of smooth muscle, platelet aggregation, and pain and  
20 inflammatory responses. (Alberts, B. et al. (1994) Molecular Biology of The Cell,  
Garland Publishing, Inc., New York, NY, pp. 85, 211, 239-240, 642-645.)

15 The nucleotide cyclases, i.e., adenylate and guanylate cyclase, catalyze the  
synthesis of the cyclic nucleotides, cAMP and cGMP, from ATP and GTP, respectively.  
They act in concert with phosphodiesterases, which degrade cAMP and cGMP, to regulate  
the cellular levels of these molecules and their functions. cAMP and cGMP function as  
30 intracellular second messengers to transduce a variety of extracellular signals, e.g.,  
hormones, and light and neurotransmitters. (Stryer, L. (1988) Biochemistry W.H.  
Freeman and Co., New York, pp. 975-980, 1029-1035.)

35 Cytokines are produced in response to cell perturbation. Some cytokines are  
produced as precursor forms, and some form multimers in order to become active. They  
are produced in groups and in patterns characteristic of the particular stimulus or disease,  
25 and the members of the group interact with one another and other molecules to produce an  
overall biological response. Interleukins, neurotrophins, growth factors, interferons, and  
chemokines are all families of cytokines which work in conjunction with cellular receptors  
to regulate cell proliferation and differentiation and to affect such activities as leukocyte  
45 migration and function, hematopoietic cell proliferation, temperature regulation, acute  
response to infections, tissue remodeling, apoptosis, and cell survival. Studies using  
30 antibodies or other drugs that modify the activity of a particular cytokine are used to  
elucidate the roles of individual cytokines in pathology and physiology.

Chemokines, in particular, are small chemoattractant cytokines involved in inflammation, leukocyte proliferation and migration, angiogenesis and angiostasis, regulation of hematopoiesis, HIV infectivity, and stimulation of cytokine secretion.

Chemokines generally contain 70-100 amino acids and are subdivided into four

subfamilies based on the presence of conserved cysteine-based motifs. (Callard, R. and Gearing, A. (1994) The Cytokine Facts Book, Academic Press, New York, NY, pp. 181-190, 210-213, 223-227.)

Growth and differentiation factors are secreted proteins which function in intercellular communication. Some factors require oligomerization or association with MPs for activity. Complex interactions among these factors and their receptors trigger intracellular signal transduction pathways that stimulate or inhibit cell division, cell differentiation, cell signaling, and cell motility. Most growth and differentiation factors act on cells in their local environment (paracrine signaling). There are three broad classes of growth and differentiation factors. The first class includes the large polypeptide growth factors such as epidermal growth factor, fibroblast growth factor, transforming growth factor, insulin-like growth factor, and platelet-derived growth factor. The second class includes the hematopoietic growth factors such as the colony stimulating factors (CSFs). Hematopoietic growth factors stimulate the proliferation and differentiation of blood cells such as B-lymphocytes, T-lymphocytes, erythrocytes, platelets, eosinophils, basophils, neutrophils, macrophages, and their stem cell precursors. The third class includes small peptide factors such as bombesin, vasopressin, oxytocin, endothelin, transferrin, angiotensin II, vasoactive intestinal peptide, and bradykinin which function as hormones to regulate cellular functions other than proliferation.

Growth and differentiation factors play critical roles in neoplastic transformation of cells in vitro and in tumor progression in vivo. Inappropriate expression of growth factors by tumor cells may contribute to vascularization and metastasis of melanotic tumors. During hematopoiesis, growth factor misregulation can result in anemias, leukemias, and lymphomas. Certain growth factors such as interferon are cytotoxic to tumor cells both in vivo and in vitro. Moreover, some growth factors and growth factor receptors are related both structurally and functionally to oncoproteins. In addition, growth factors affect transcriptional regulation of both proto-oncogenes and oncosuppressor genes. (Reviewed in Pimentel, E. (1994) Handbook of Growth Factors, CRC Press, Ann Arbor, MI, pp. 1-9.)

5 Proteolytic enzymes or proteases either activate or deactivate proteins by  
hydrolyzing peptide bonds. Proteases are found in the cytosol, in membrane-bound  
compartments, and in the extracellular space. The major families are the zinc, serine,  
10 cysteine, thiol, and carboxyl proteases.

- 5 Zinc proteases, e.g., carboxypeptidase A, have a zinc ion bound to the active site.  
These proteases recognize C-terminal residues that contain an aromatic or bulky aliphatic  
side chain, and hydrolyze the peptide bond adjacent to the C-terminal residues. Serine  
15 proteases have an active site serine residue and include digestive enzymes, e.g., trypsin  
and chymotrypsin, components of the complement and blood-clotting cascades, and  
20 enzymes that control the degradation and turnover of extracellular matrix (ECM)  
molecules. Cysteine proteases (e.g. cathepsin) are produced by monocytes, macrophages  
and other immune cells, and are involved in diverse cellular processes ranging from the  
processing of precursor proteins to intracellular degradation. Overproduction of these  
enzymes can cause the tissue destruction associated with rheumatoid arthritis and asthma.  
25 Thiol proteases, e.g., papain, contain an active site cysteine and are widely distributed  
within tissues. Carboxyl proteases, e.g., pepsin, are active only under acidic conditions  
(pH 2 to 3).

- 30 Guanosine triphosphate-binding proteins (G proteins) can be grouped into two  
major classes: heterotrimeric G proteins and small G proteins. Heterotrimeric G proteins  
25 interact with GPCRs that respond to hormones, growth factors, neuromodulators, or other  
signaling molecules. The interaction between GPCR and G protein allows the G protein to  
exchange GTP for guanosine diphosphate (GDP). This exchange activates the G protein,  
35 allowing it to dissociate from the receptor and interact with its cognate second  
messenger-generating protein, e.g., adenylate cyclase, guanylate cyclase, phospholipase C,  
40 or ion channels. The hydrolysis of GTP to GDP by the G protein acts as an on-off switch,  
terminating the action of the G protein and preparing it to interact with another receptor  
molecule, thus beginning another round of signal transduction.

- 45 The small G proteins consist of single 21-30 kDa polypeptides. They can be  
classified into five subfamilies: Ras, Rho, Ran, Rab, and ADP-ribosylation factor. These  
30 proteins regulate cell growth, cell cycle control, protein secretion, and intracellular vesicle  
interaction. In particular, the Ras proteins are essential in transducing signals from  
receptor tyrosine kinases to serine/threonine kinases which control cell growth and  
50

5 differentiation. Mutant Ras proteins, which bind but can not hydrolyze GTP, are  
permanently activated and cause continuous cell proliferation or cancer. All five  
subfamilies share common structural features and four conserved motifs. Most of the  
10 membrane-bound G proteins require a carboxy terminal isoprenyl group (CAAX), added  
5 posttranslationally, for membrane association and biological activity. The G proteins also  
have a variable effector region, located between motifs I and II, which is characterized as  
the interaction site for guanine nucleotide exchange factors or GTPase-activating proteins.

15 Eukaryotic cells are bound by a membrane and subdivided into membrane-bound  
compartments. Membranes are impermeable to many ions and polar molecules, therefore  
10 transport of these molecules is mediated by ion channels, ion pumps, transport proteins, or  
pumps. Symporters and antiporters regulate cytosolic pH by transporting ions and small  
20 molecules, e.g., amino acids, glucose, and drugs, across membranes; symporters transport  
small molecules and ions in the same direction, and antiporters, in the opposite direction.  
Transporter superfamilies include facilitative transporters and active ATP binding cassette  
25 transporters involved in multiple-drug resistance and the targeting of antigenic peptides to  
MHC Class I molecules. These transporters bind to a specific ion or other molecule and  
undergo conformational changes in order to transfer the ion or molecule across a  
30 membrane. Transport can occur by a passive, concentration-dependent mechanism or can  
be linked to an energy source such as ATP hydrolysis or an ion gradient.

20 Ion channels, ion pumps, and transport proteins mediate the transport of molecules  
across cellular membranes. Symporters and antiporters regulate cytosolic pH by  
35 transporting ions and small molecules such as amino acids, glucose, and drugs.  
Symporters transport small molecules and ions unidirectionally, and antiporters,  
bidirectionally. Transporter superfamilies include facilitative transporters and active ATP-  
25 binding cassette transporters which are involved in multiple-drug resistance and the  
40 targeting of antigenic peptides to MHC Class I molecules. These transporters bind to a  
specific ion or other molecule and undergo a conformational change in order to transfer  
the ion or molecule across the membrane. Transport can occur by a passive,  
45 concentration-dependent mechanism or can be linked to an energy source such as ATP  
30 hydrolysis. (Reviewed in Alberts, B. et al. (1994) Molecular Biology of The Cell, Garland  
Publishing, New York, NY, pp. 523-546.)



5 Ion channels are formed by transmembrane proteins which create a lined  
passageway across the membrane through which water and ions, such as  $\text{Na}^+$ ,  $\text{K}^+$ ,  $\text{Ca}^{2+}$ ,  
and  $\text{Cl}^-$ , enter and exit the cell. For example, chloride channels are involved in the  
10 regulation of the membrane electric potential as well as absorption and secretion of ions  
5 across the membrane. Chloride channels also regulate the internal pH of membrane-bound  
organelles.

15 Ion pumps are ATPases which actively maintain membrane gradients. Ion pumps  
are classified as P, V, or F according to their structure and function. All have one or more  
binding sites for ATP in their cytosolic domains. The P-class ion pumps include  $\text{Ca}^{2+}$   
10 ATPase and  $\text{Na}^+/\text{K}^+$  ATPase and function in transporting  $\text{H}^+$ ,  $\text{Na}^+$ ,  $\text{K}^+$ , and  $\text{Ca}^{2+}$  ions. P-  
class pumps consist of two  $\alpha$  and two  $\beta$  transmembrane subunits. The V- and F-class ion  
20 pumps have similar structures and but transport only  $\text{H}^+$ . F class  $\text{H}^+$  pumps mediate  
transport across the membranes of mitochondria and chloroplasts, while V-class  $\text{H}^+$  pumps  
regulate acidity inside lysosomes, endosomes, and plant vacuoles.

25 15 A family of structurally related intrinsic membrane proteins known as facilitative  
glucose transporters catalyze the movement of glucose and other selected sugars across the  
plasma membrane. The proteins in this family contain a highly conserved, large  
transmembrane domain comprised of 12  $\alpha$ -helices, and several weakly conserved,  
30 cytoplasmic and exoplasmic domains (Pessin, J. E., and Bell, G.I. (1992) *Annu. Rev.*  
20 *Physiol.* 54:911-930).

Amino acid transport is mediated by  $\text{Na}^+$  dependent amino acid transporters.  
35 These transporters are involved in gastrointestinal and renal uptake of dietary and cellular  
amino acids and in neuronal reuptake of neurotransmitters. Transport of cationic amino  
acids is mediated by the system  $y^+$  family and the cationic amino acid transporter (CAT)  
25 family. Members of the CAT family share a high degree of sequence homology, and each  
40 contains 12-14 putative transmembrane domains (Ito, K. and Groudine, M. (1997) *J. Biol.*  
*Chem.* 272:26780-26786).

Proton-coupled, 12 membrane-spanning domain transporters such as PEPT 1 and  
45 PEPT 2 are responsible for gastrointestinal absorption and for renal reabsorption of  
30 peptides using an electrochemical  $\text{H}^+$  gradient as the driving force. A heterodimeric  
peptide transporter, consisting of TAP 1 and TAP 2, is associated with antigen processing.  
Peptide antigens are transported across the membrane of the endoplasmic reticulum so  
50

they can be presented to the major histocompatibility complex class I molecules. Each TAP protein consists of multiple hydrophobic membrane spanning segments and a highly conserved ATP-binding cassette. (Boll, M. et al. (1996) Proc. Natl. Acad. Sci. 93:284-289.)

Hormones are secreted molecules that travel through the circulation and bind to specific receptors on the surface of, or within, target cells. Although they have diverse biochemical compositions and mechanisms of action, hormones can be grouped into two categories. One category consists of small lipophilic hormones that diffuse through the plasma membrane of target cells, bind to cytosolic or nuclear receptors, and form a complex that alters gene expression. Examples of these molecules include retinoic acid, thyroxine, and the cholesterol-derived steroid hormones such as progesterone, estrogen, testosterone, cortisol, and aldosterone. The second category consists of hydrophilic hormones that function by binding to cell surface receptors that transduce signals across the plasma membrane. Examples of such hormones include amino acid derivatives such as catecholamines and peptide hormones such as glucagon, insulin, gastrin, secretin, cholecystokinin, adrenocorticotrophic hormone, follicle stimulating hormone, luteinizing hormone, thyroid stimulating hormone, and vasopressin. (See, for example, Lodish et al. (1995) Molecular Cell Biology, Scientific American Books Inc., New York, NY, pp. 856-864.)

Neuropeptides and vasomediators (NP/VM) comprise a large family of endogenous signaling molecules. Included in this family are neuropeptides and neuropeptide hormones such as bombesin, neuropeptide Y, neurotensin, neuromedin N, melanocortins, opioids, galanin, somatostatin, tachykinins, urotensin II and related peptides involved in smooth muscle stimulation, vasopressin, vasoactive intestinal peptide, and circulatory system-borne signaling molecules such as angiotensin, complement, calcitonin, endothelins, formyl-methionyl peptides, glucagon, cholecystokinin and gastrin. NP/VMs can transduce signals directly, modulate the activity or release of other neurotransmitters and hormones, and act as catalytic enzymes in cascades. The effects of NP/VMs range from extremely brief to long-lasting. (Reviewed in Martin, C. R. et al. (1985) Endocrine Physiology, Oxford University Press, New York, NY, pp. 57-62.)

Regulatory molecules turn individual genes or groups of genes on and off in response to various inductive mechanisms of the cell or organism; act as transcription factors by determining

whether or not transcription is initiated, enhanced, or repressed; and splice transcripts as dictated in a particular cell or tissue. Although they interact with short stretches of DNA scattered throughout the entire genome, most gene expression is regulated near the site at which transcription starts or within the open reading frame of the gene being expressed. Many of the transcription factors incorporate one of a set of DNA-binding structural motifs, each of which contains either  $\alpha$  helices or  $\beta$  sheets and binds to the major groove of DNA. (Pabo, C.O. and R.T. Sauer (1992) *Ann. Rev. Biochem.* 61:1053-95.) Other domains of transcription factors may form crucial contacts with the DNA. In addition, accessory proteins provide important interactions which may convert a particular protein complex to an activator or a repressor or may prevent binding. (Alberts, B. et al. (1994) *Molecular Biology of the Cell*, Garland Publishing Co, New York, NY pp. 401-474.)

The discovery of new human signal peptide-containing proteins and the polynucleotides encoding them satisfies a need in the art by providing new compositions which are useful in the diagnosis, prevention, and treatment of cell proliferative disorders including cancer; inflammation; and cardiovascular, neurological, reproductive, and developmental disorders.

#### SUMMARY OF THE INVENTION

The invention features substantially purified polypeptides, proteins with signal peptides, referred to collectively as "HSPP" and individually as "HSPP-1", "HSPP-2", "HSPP-3", "HSPP-4", "HSPP-5", "HSPP-6", "HSPP-7", "HSPP-8", "HSPP-9", "HSPP-10", "HSPP-11", "HSPP-12", "HSPP-13", "HSPP-14", "HSPP-15", "HSPP-16", "HSPP-17", "HSPP-18", "HSPP-19", "HSPP-20", "HSPP-21", "HSPP-22", "HSPP-23", "HSPP-24", "HSPP-25", "HSPP-26", "HSPP-27", "HSPP-28", "HSPP-29", "HSPP-30", "HSPP-31", "HSPP-32", "HSPP-33", "HSPP-34", "HSPP-35", "HSPP-36", "HSPP-37", "HSPP-38", "HSPP-39", "HSPP-40", "HSPP-41", "HSPP-42", "HSPP-43", "HSPP-44", "HSPP-45", "HSPP-46", "HSPP-47", "HSPP-48", "HSPP-49", "HSPP-50", "HSPP-51", "HSPP-52", "HSPP-53", "HSPP-54", "HSPP-55", "HSPP-56", "HSPP-57", "HSPP-58", "HSPP-59", "HSPP-60", "HSPP-61", "HSPP-62", "HSPP-63", "HSPP-64", "HSPP-65", "HSPP-66", "HSPP-67", "HSPP-68", "HSPP-69", "HSPP-70", "HSPP-71", "HSPP-72", "HSPP-73", "HSPP-74", "HSPP-75", "HSPP-76", "HSPP-77", "HSPP-78", "HSPP-79", "HSPP-80", "HSPP-81", "HSPP-82", "HSPP-83", "HSPP-84", "HSPP-85", "HSPP-86", "HSPP-87", "HSPP-88", "HSPP-89", "HSPP-90", "HSPP-91", "HSPP-92", "HSPP-93", "HSPP-94", "HSPP-95", "HSPP-96", "HSPP-97", "HSPP-98", "HSPP-99", "HSPP-100", "HSPP-

5 101", "HSPP-102", "HSPP-103", "HSPP-104", "HSPP-105", "HSPP-106", "HSPP-107",  
"HSPP-108", "HSPP-109", "HSPP-110", "HSPP-111", "HSPP-112", "HSPP-113", "HSPP-  
10 114", "HSPP-115", "HSPP-116", "HSPP-117", "HSPP-118", "HSPP-119", "HSPP-120",  
"HSPP-121", "HSPP-122", "HSPP-123", "HSPP-124", "HSPP-125", "HSPP-126",  
5 "HSPP-127", "HSPP-128", "HSPP-129", "HSPP-130", "HSPP-131", "HSPP-132",  
"HSPP-133", and "HSPP-134". In one aspect, the invention provides a substantially  
purified polypeptide comprising an amino acid sequence selected from the group  
15 consisting of SEQ ID NO:1, SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5,  
SEQ ID NO:6, SEQ ID NO:7, SEQ ID NO:8, SEQ ID NO:9, SEQ ID NO:10, SEQ ID  
10 NO:11, SEQ ID NO:12, SEQ ID NO:13, SEQ ID NO:14, SEQ ID NO:15, SEQ ID NO:16,  
SEQ ID NO:17, SEQ ID NO:18, SEQ ID NO:19, SEQ ID NO:20, SEQ ID NO:21, SEQ  
20 ID NO:22, SEQ ID NO:23, SEQ ID NO:24, SEQ ID NO:25, SEQ ID NO:26, SEQ ID  
NO:27, SEQ ID NO:28, SEQ ID NO:29, SEQ ID NO:30, SEQ ID NO:31, SEQ ID  
NO:32, SEQ ID NO:33, SEQ ID NO:34, SEQ ID NO:35, SEQ ID NO:36, SEQ ID NO:37,  
25 SEQ ID NO:38, SEQ ID NO:39, SEQ ID NO:40, SEQ ID NO:41, SEQ ID NO:42, SEQ  
ID NO:43, SEQ ID NO:44, SEQ ID NO:45, SEQ ID NO:46, SEQ ID NO:47, SEQ ID  
NO:48, SEQ ID NO:49, SEQ ID NO:50, SEQ ID NO:51, SEQ ID NO:52, SEQ ID NO:53,  
SEQ ID NO:54, SEQ ID NO:55, SEQ ID NO:56, SEQ ID NO:57, SEQ ID NO:58, SEQ  
30 ID NO:59, SEQ ID NO:60, SEQ ID NO:61, SEQ ID NO:62, SEQ ID NO:63, SEQ ID  
NO:64, SEQ ID NO:65, SEQ ID NO:66, SEQ ID NO:67, SEQ ID NO:68, SEQ ID NO:69,  
SEQ ID NO:70, SEQ ID NO:71, SEQ ID NO:72, SEQ ID NO:73, SEQ ID NO:74, SEQ  
35 ID NO:75, SEQ ID NO:76, SEQ ID NO:77, SEQ ID NO:78, SEQ ID NO:79, SEQ ID  
NO:80, SEQ ID NO:81, SEQ ID NO:82, SEQ ID NO:83, SEQ ID NO:84, SEQ ID NO:85,  
SEQ ID NO:86, SEQ ID NO:87, SEQ ID NO:88, SEQ ID NO:89, SEQ ID NO:90, SEQ  
25 ID NO:91, SEQ ID NO:92, SEQ ID NO:93, SEQ ID NO:94, SEQ ID NO:95, SEQ ID  
40 NO:96, SEQ ID NO:97, SEQ ID NO:98, SEQ ID NO:99, SEQ ID NO:100, SEQ ID  
NO:101, SEQ ID NO:102, SEQ ID NO:103, SEQ ID NO:104, SEQ ID NO:105, SEQ ID  
NO:106, SEQ ID NO:107, SEQ ID NO:108, SEQ ID NO:109, SEQ ID NO:110, SEQ ID  
45 NO:111, SEQ ID NO:112, SEQ ID NO:113, SEQ ID NO:114, SEQ ID NO:115, SEQ ID  
30 NO:116, SEQ ID NO:117, SEQ ID NO:118, SEQ ID NO:119, SEQ ID NO:120, SEQ ID  
NO:121, SEQ ID NO:122, SEQ ID NO:123, SEQ ID NO:124, SEQ ID NO:125, SEQ ID  
NO:126, SEQ ID NO:127, SEQ ID NO:128, SEQ ID NO:129, SEQ ID NO:130, SEQ ID

5 NO:131, SEQ ID NO:132, SEQ ID NO:133, SEQ ID NO:134 (SEQ ID NO:1-134), and fragments thereof.

10 The invention further provides a substantially purified variant having at least 90% amino acid identity to at least one of the amino acid sequences selected from the group consisting of SEQ ID NO:1-134, and fragments thereof. The invention also provides an isolated and purified polynucleotide encoding the polypeptide comprising an amino acid sequence selected from the group consisting of SEQ ID NO:1-134, and fragments thereof. The invention also includes an isolated and purified polynucleotide variant having at least 90% polynucleotide sequence identity to the polynucleotide encoding the polypeptide comprising an amino acid sequence selected from the group consisting of SEQ ID NO:1-134, and fragments thereof.

20 Additionally, the invention provides an isolated and purified polynucleotide which hybridizes under stringent conditions to the polynucleotide encoding the polypeptide comprising an amino acid sequence selected from the group consisting of SEQ ID NO:1-134, and fragments thereof. The invention also provides an isolated and purified polynucleotide having a sequence which is complementary to the polynucleotide encoding the polypeptide comprising the amino acid sequence selected from the group consisting of SEQ ID NO:1-134, and fragments thereof.

30 The invention also provides an isolated and purified polynucleotide comprising a polynucleotide sequence selected from the group consisting of SEQ ID NO:135, SEQ ID NO:136, SEQ ID NO:137, SEQ ID NO:138, SEQ ID NO:139, SEQ ID NO:140, SEQ ID NO:141, SEQ ID NO:142, SEQ ID NO:143, SEQ ID NO:144, SEQ ID NO:145, SEQ ID NO:146, SEQ ID NO:147, SEQ ID NO:148, SEQ ID NO:149, SEQ ID NO:150, SEQ ID NO:151, SEQ ID NO:152, SEQ ID NO:153, SEQ ID NO:154, SEQ ID NO:155, SEQ ID NO:156, SEQ ID NO:157, SEQ ID NO:158, SEQ ID NO:159, SEQ ID NO:160, SEQ ID NO:161, SEQ ID NO:162, SEQ ID NO:163, SEQ ID NO:164, SEQ ID NO:165, SEQ ID NO:166, SEQ ID NO:167, SEQ ID NO:168, SEQ ID NO:169, SEQ ID NO:170, SEQ ID NO:171, SEQ ID NO:172, SEQ ID NO:173, SEQ ID NO:174, SEQ ID NO:175, SEQ ID NO:176, SEQ ID NO:177, SEQ ID NO:178, SEQ ID NO:179, SEQ ID NO:180, SEQ ID NO:181, SEQ ID NO:182, SEQ ID NO:183, SEQ ID NO:184, SEQ ID NO:185, SEQ ID NO:186, SEQ ID NO:187, SEQ ID NO:188, SEQ ID NO:189, SEQ ID NO:190, SEQ ID NO:191, SEQ ID NO:192, SEQ ID NO:193, SEQ ID NO:194, SEQ ID NO:195, SEQ ID

5 NO:196, SEQ ID NO:197, SEQ ID NO:198, SEQ ID NO:199, SEQ ID NO:200, SEQ ID  
NO:201, SEQ ID NO:202, SEQ ID NO:203, SEQ ID NO:204, SEQ ID NO:205, SEQ ID  
NO:206, SEQ ID NO:207, SEQ ID NO:208, SEQ ID NO:209, SEQ ID NO:210, SEQ ID  
10 NO:211, SEQ ID NO:212, SEQ ID NO:213, SEQ ID NO:214, SEQ ID NO:215, SEQ ID  
5 NO:216, SEQ ID NO:217, SEQ ID NO:218, SEQ ID NO:219, SEQ ID NO:220, SEQ ID  
NO:221, SEQ ID NO:222, SEQ ID NO:223, SEQ ID NO:224, SEQ ID NO:225, SEQ ID  
NO:226, SEQ ID NO:227, SEQ ID NO:228, SEQ ID NO:229, SEQ ID NO:230, SEQ ID  
15 NO:231, SEQ ID NO:232, SEQ ID NO:233, SEQ ID NO:234, SEQ ID NO:235, SEQ ID  
NO:236, SEQ ID NO:237, SEQ ID NO:238, SEQ ID NO:239, SEQ ID NO:240, SEQ ID  
10 NO:241, SEQ ID NO:242, SEQ ID NO:243, SEQ ID NO:244, SEQ ID NO:245, SEQ ID  
NO:246, SEQ ID NO:247, SEQ ID NO:248, SEQ ID NO:249, SEQ ID NO:250, SEQ ID  
20 NO:251, SEQ ID NO:252, SEQ ID NO:253, SEQ ID NO:254, SEQ ID NO:255, SEQ ID  
NO:256, SEQ ID NO:257, SEQ ID NO:258, SEQ ID NO:259, SEQ ID NO:260, SEQ ID  
NO:261, SEQ ID NO:262, SEQ ID NO:263, SEQ ID NO:264, SEQ ID NO:265, SEQ ID  
25 NO:266, SEQ ID NO:267, SEQ ID NO:268 (SEQ ID NO:135-268), and fragments  
thereof. The invention further provides an isolated and purified polynucleotide variant  
having at least 90% polynucleotide sequence identity to the polynucleotide sequence  
selected from the group consisting of SEQ ID NO:135-268, and fragments thereof. The  
30 invention also provides an isolated and purified polynucleotide having a sequence which is  
20 complementary to the polynucleotide comprising a polynucleotide sequence selected from  
the group consisting of SEQ ID NO:135-268, and fragments thereof.

35 The invention also provides a method for detecting a polynucleotide in a sample  
containing nucleic acids, the method comprising the steps of (a) hybridizing the  
complement of the polynucleotide sequence to at least one of the polynucleotides of the  
25 sample, thereby forming a hybridization complex; and (b) detecting the hybridization  
40 complex, wherein the presence of the hybridization complex correlates with the presence  
of a polynucleotide in the sample. In one aspect, the method further comprises amplifying  
the polynucleotide prior to hybridization.

45 The invention further provides an expression vector containing at least a fragment  
30 of the polynucleotide encoding the polypeptide comprising an amino acid sequence  
selected from the group consisting of SEQ ID NO:1-134, and fragments thereof. In  
another aspect, the expression vector is contained within a host cell.

5 The invention also provides a method for producing a polypeptide, the method comprising the steps of: (a) culturing the host cell containing an expression vector containing at least a fragment of a polynucleotide under conditions suitable for the expression of the polypeptide; and (b) recovering the polypeptide from the host cell  
10 culture.

The invention also provides a pharmaceutical composition comprising a substantially purified polypeptide having the amino acid sequence selected from the group consisting of SEQ ID NO:1-134, and fragments thereof, in conjunction with a suitable pharmaceutical carrier.

15 The invention further includes a purified antibody which binds to a polypeptide selected from the group consisting of SEQ ID NO:1-134, and fragments thereof. The invention also provides a purified agonist and a purified antagonist to the polypeptide.

20 The invention also provides a method for treating or preventing a disorder associated with decreased expression or activity of HSPP, the method comprising administering to a subject in need of such treatment an effective amount of a pharmaceutical composition comprising a substantially purified polypeptide having the amino acid sequence selected from the group consisting of SEQ ID NO:1-134, and fragments thereof, in conjunction with a suitable pharmaceutical carrier.

25 The invention also provides a method for treating or preventing a disorder associated with increased expression or activity of HSPP, the method comprising administering to a subject in need of such treatment an effective amount of an antagonist of a polypeptide having an amino acid sequence selected from the group consisting of SEQ ID NO:1-134, and fragments thereof.

#### 30 BRIEF DESCRIPTION OF THE TABLE

35 Table 1 shows nucleotide and polypeptide sequence identification numbers (SEQ ID NO), clone identification numbers (clone ID), cDNA libraries, and cDNA fragments used to assemble full-length sequences encoding HSPP.

40 Table 2 shows features of each polypeptide sequence, including predicted signal peptide sequences, and methods and algorithms used for identification of HSPP.

5 Table 3 shows the tissue-specific expression patterns of each nucleic acid sequence as determined by northern analysis, diseases, disorders, or conditions associated with these tissues, and the vector into which each cDNA was cloned.

10 Table 4 describes the tissues used to construct the cDNA libraries from which Incyte cDNA clones encoding HSPP were isolated.

Table 5 shows the programs, their descriptions, references, and threshold parameters used to analyze HSPP.

15 Table 6 shows the regions of the full-length nucleotide sequences of HSPP to which cDNA fragments of Table 1 correspond.

10

### DESCRIPTION OF THE INVENTION

20 Before the present proteins, nucleotide sequences, and methods are described, it is understood that this invention is not limited to the particular machines, materials and methods described, as these may vary. It is also to be understood that the terminology  
25 used herein is for the purpose of describing particular embodiments only, and is not intended to limit the scope of the present invention which will be limited only by the appended claims.

30 It must be noted that as used herein and in the appended claims, the singular forms "a," "an," and "the" include plural reference unless the context clearly dictates otherwise.

20 Thus, for example, a reference to "a host cell" includes a plurality of such host cells, and a reference to "an antibody" is a reference to one or more antibodies and equivalents thereof known to those skilled in the art, and so forth.

35 Unless defined otherwise, all technical and scientific terms used herein have the same meanings as commonly understood by one of ordinary skill in the art to which this invention belongs. Although any machines, materials, and methods similar or equivalent  
40 to those described herein can be used to practice or test the present invention, the preferred machines, materials and methods are now described. All publications mentioned herein are cited for the purpose of describing and disclosing the cell lines, protocols, reagents and vectors which are reported in the publications and which might be used in connection with  
45 the invention. Nothing herein is to be construed as an admission that the invention is not entitled to antedate such disclosure by virtue of prior invention.

30



**DEFINITIONS**

"HSPP" refers to the amino acid sequences of substantially purified HSPP obtained from any species, particularly a mammalian species, including bovine, ovine, porcine, murine, equine, and preferably the human species, from any source, whether natural, synthetic, semi-synthetic, or recombinant.

The term "agonist" refers to a molecule which, when bound to HSPP, increases or prolongs the duration of the effect of HSPP. Agonists may include proteins, nucleic acids, carbohydrates, or any other molecules which bind to and modulate the effect of HSPP.

An "allelic variant" is an alternative form of the gene encoding HSPP. Allelic variants may result from at least one mutation in the nucleic acid sequence and may result in altered mRNAs or in polypeptides whose structure or function may or may not be altered. Any given natural or recombinant gene may have none, one, or many allelic forms. Common mutational changes which give rise to allelic variants are generally ascribed to natural deletions, additions, or substitutions of nucleotides. Each of these types of changes may occur alone, or in combination with the others, one or more times in a given sequence.

"Altered" nucleic acid sequences encoding HSPP include those sequences with deletions, insertions, or substitutions of different nucleotides, resulting in a polynucleotide the same as HSPP or a polypeptide with at least one functional characteristic of HSPP. Included within this definition are polymorphisms which may or may not be readily detectable using a particular oligonucleotide probe of the polynucleotide encoding HSPP, and improper or unexpected hybridization to allelic variants, with a locus other than the normal chromosomal locus for the polynucleotide sequence encoding HSPP. The encoded protein may also be "altered," and may contain deletions, insertions, or substitutions of amino acid residues which produce a silent change and result in a functionally equivalent HSPP. Deliberate amino acid substitutions may be made on the basis of similarity in polarity, charge, solubility, hydrophobicity, hydrophilicity, and/or the amphipathic nature of the residues, as long as the biological or immunological activity of HSPP is retained. For example, negatively charged amino acids may include aspartic acid and glutamic acid, positively charged amino acids may include lysine and arginine, and amino acids with uncharged polar head groups having similar hydrophilicity values may include leucine,

5 isoleucine, and valine; glycine and alanine; asparagine and glutamine; serine and threonine; and phenylalanine and tyrosine.

10 The terms "amino acid" or "amino acid sequence" refer to an oligopeptide, peptide, polypeptide, or protein sequence, or a fragment of any of these, and to naturally occurring  
5 or synthetic molecules. In this context, "fragments," "immunogenic fragments," or "antigenic fragments" refer to fragments of HSPP which are preferably at least 5 to about 15 amino acids in length, most preferably at least 14 amino acids, and which retain some biological activity or immunological activity of HSPP. Where "amino acid sequence" is recited to refer to an amino acid sequence of a naturally occurring protein molecule,  
15 "amino acid sequence" and like terms are not meant to limit the amino acid sequence to the complete native amino acid sequence associated with the recited protein molecule.

20 "Amplification" relates to the production of additional copies of a nucleic acid sequence. Amplification is generally carried out using polymerase chain reaction (PCR) technologies well known in the art.

25 15 The term "antagonist" refers to a molecule which, when bound to HSPP, decreases the amount or the duration of the effect of the biological or immunological activity of HSPP. Antagonists may include proteins, nucleic acids, carbohydrates, antibodies, or any other molecules which decrease the effect of HSPP.

30 The term "antibody" refers to intact molecules as well as to fragments thereof, such as Fab, F(ab')<sub>2</sub>, and Fv fragments, which are capable of binding the epitopic determinant. Antibodies that bind HSPP polypeptides can be prepared using intact polypeptides or using fragments containing small peptides of interest as the immunizing antigen. The polypeptide or oligopeptide used to immunize an animal (e.g., a mouse, a rat, or a rabbit) can be derived from the translation of RNA, or synthesized chemically, and can be  
35 conjugated to a carrier protein if desired. Commonly used carriers that are chemically coupled to peptides include bovine serum albumin, thyroglobulin, and keyhole limpet hemocyanin (KLH). The coupled peptide is then used to immunize the animal.

40 The term "antigenic determinant" refers to that fragment of a molecule (i.e., an epitope) that makes contact with a particular antibody. When a protein or a fragment of a  
45 protein is used to immunize a host animal, numerous regions of the protein may induce the production of antibodies which bind specifically to antigenic determinants (given regions or three-dimensional structures on the protein). An antigenic determinant may compete  
50

5 with the intact antigen (i.e., the immunogen used to elicit the immune response) for binding to an antibody.

The term "antisense" refers to any composition containing a nucleic acid sequence which is complementary to the "sense" strand of a specific nucleic acid sequence.

10 5 Antisense molecules may be produced by any method including synthesis or transcription. Once introduced into a cell, the complementary nucleotides combine with natural sequences produced by the cell to form duplexes and to block either transcription or translation. The designation "negative" can refer to the antisense strand, and the designation "positive" can refer to the sense strand.

10 The term "biologically active," refers to a protein having structural, regulatory, or biochemical functions of a naturally occurring molecule. Likewise, "immunologically active" refers to the capability of the natural, recombinant, or synthetic HSPP, or of any oligopeptide thereof, to induce a specific immune response in appropriate animals or cells and to bind with specific antibodies.

25 15 The terms "complementary" or "complementarity" refer to the natural binding of polynucleotides by base pairing. For example, the sequence "5' A-G-T 3'" bonds to the complementary sequence "3' T-C-A 5'." Complementarity between two single-stranded molecules may be "partial," such that only some of the nucleic acids bind, or it may be "complete," such that total complementarity exists between the single stranded molecules.

30 20 The degree of complementarity between nucleic acid strands has significant effects on the efficiency and strength of the hybridization between the nucleic acid strands. This is of particular importance in amplification reactions, which depend upon binding between nucleic acids strands, and in the design and use of peptide nucleic acid (PNA) molecules.

35 A "composition comprising a given polynucleotide sequence" or a "composition comprising a given amino acid sequence" refer broadly to any composition containing the given polynucleotide or amino acid sequence. The composition may comprise a dry formulation or an aqueous solution. Compositions comprising polynucleotide sequences encoding HSPP or fragments of HSPP may be employed as hybridization probes. The probes may be stored in freeze-dried form and may be associated with a stabilizing agent

40 25 such as a carbohydrate. In hybridizations, the probe may be deployed in an aqueous solution containing salts (e.g., NaCl), detergents (e.g., sodium dodecyl sulfate; SDS), and other components (e.g., Denhardt's solution, dry milk, salmon sperm DNA, etc.).

45 30

50

5 "Consensus sequence" refers to a nucleic acid sequence which has been  
resequenced to resolve uncalled bases, extended using XL-PCR kit (Perkin-Elmer,  
Norwalk CT) in the 5' and/or the 3' direction, and resequenced, or which has been  
10 assembled from the overlapping sequences of more than one Incyte Clone using a  
5 computer program for fragment assembly, such as the GELVIEW Fragment Assembly  
system (GCG, Madison WI). Some sequences have been both extended and assembled to  
produce the consensus sequence.

15 The term "correlates with expression of a polynucleotide" indicates that the  
detection of the presence of nucleic acids, the same or related to a nucleic acid sequence  
10 encoding HSPP, by northern analysis is indicative of the presence of nucleic acids  
encoding HSPP in a sample, and thereby correlates with expression of the transcript from  
20 the polynucleotide encoding HSPP.

A "deletion" refers to a change in the amino acid or nucleotide sequence that results  
in the absence of one or more amino acid residues or nucleotides.

25 The term "derivative" refers to the chemical modification of a polypeptide  
sequence, or a polynucleotide sequence. Chemical modifications of a polynucleotide  
sequence can include, for example, replacement of hydrogen by an alkyl, acyl, or amino  
30 group. A derivative polynucleotide encodes a polypeptide which retains at least one  
biological or immunological function of the natural molecule. A derivative polypeptide is  
20 one modified by glycosylation, pegylation, or any similar process that retains at least one  
biological or immunological function of the polypeptide from which it was derived.

35 The term "similarity" refers to a degree of complementarity. There may be partial  
similarity or complete similarity. The word "identity" may substitute for the word  
"similarity." A partially complementary sequence that at least partially inhibits an  
25 identical sequence from hybridizing to a target nucleic acid is referred to as "substantially  
40 similar." The inhibition of hybridization of the completely complementary sequence to  
the target sequence may be examined using a hybridization assay (Southern or northern  
blot, solution hybridization, and the like) under conditions of reduced stringency. A  
45 substantially similar sequence or hybridization probe will compete for and inhibit the  
30 binding of a completely similar (identical) sequence to the target sequence under  
conditions of reduced stringency. This is not to say that conditions of reduced stringency  
are such that non-specific binding is permitted, as reduced stringency conditions require

5 that the binding of two sequences to one another be a specific (i.e., a selective) interaction. The absence of non-specific binding may be tested by the use of a second target sequence which lacks even a partial degree of complementarity (e.g., less than about 30% similarity or identity). In the absence of non-specific binding, the substantially similar sequence or  
10 probe will not hybridize to the second non-complementary target sequence.

The phrases "percent identity" or "% identity" refer to the percentage of sequence similarity found in a comparison of two or more amino acid or nucleic acid sequences. Percent identity can be determined electronically, e.g., by using the MEGALIGN program (DNASTAR, Madison WI) which creates alignments between two or more sequences  
15 according to methods selected by the user, e.g., the clustal method. (See, e.g., Higgins, D.G. and P.M. Sharp (1988) Gene 73:237-244.) The clustal algorithm groups sequences into clusters by examining the distances between all pairs. The clusters are aligned pairwise and then in groups. The percentage similarity between two amino acid sequences, e.g., sequence A and sequence B, is calculated by dividing the length of  
20 sequence A, minus the number of gap residues in sequence A, minus the number of gap residues in sequence B, into the sum of the residue matches between sequence A and sequence B, times one hundred. Gaps of low or of no similarity between the two amino acid sequences are not included in determining percentage similarity. Percent identity  
25 between nucleic acid sequences can also be counted or calculated by other methods known in the art, e.g., the Jotun Hein method. (See, e.g., Hein, J. (1990) Methods Enzymol. 183:626-645.) Identity between sequences can also be determined by other methods  
30 known in the art, e.g., by varying hybridization conditions.

"Human artificial chromosomes" (HACs) are linear microchromosomes which may contain DNA sequences of about 6 kb to 10 Mb in size, and which contain all of the  
35 elements required for stable mitotic chromosome segregation and maintenance.

40 The term "humanized antibody" refers to antibody molecules in which the amino acid sequence in the non-antigen binding regions has been altered so that the antibody more closely resembles a human antibody, and still retains its original binding ability.

45 "Hybridization" refers to any process by which a strand of nucleic acid binds with  
30 a complementary strand through base pairing.

The term "hybridization complex" refers to a complex formed between two nucleic acid sequences by virtue of the formation of hydrogen bonds between complementary  
50

5 bases. A hybridization complex may be formed in solution (e.g., C<sub>0</sub>t or R<sub>0</sub>t analysis) or  
formed between one nucleic acid sequence present in solution and another nucleic acid  
sequence immobilized on a solid support (e.g., paper, membranes, filters, chips, pins or  
10 glass slides, or any other appropriate substrate to which cells or their nucleic acids have  
5 been fixed).

The words "insertion" or "addition" refer to changes in an amino acid or nucleotide  
sequence resulting in the addition of one or more amino acid residues or nucleotides,  
15 respectively, to the sequence found in the naturally occurring molecule.

"Immune response" can refer to conditions associated with inflammation, trauma,  
10 immune disorders, or infectious or genetic disease, etc. These conditions can be  
characterized by expression of various factors, e.g., cytokines, chemokines, and other  
20 signaling molecules, which may affect cellular and systemic defense systems.

The term "microarray" refers to an arrangement of distinct polynucleotides on a  
substrate.

25 The terms "element" or "array element" in a microarray context, refer to  
hybridizable polynucleotides arranged on the surface of a substrate.

The term "modulate" refers to a change in the activity of HSPP. For example,  
modulation may cause an increase or a decrease in protein activity, binding characteristics,  
30 or any other biological, functional, or immunological properties of HSPP.

20 The phrases "nucleic acid" or "nucleic acid sequence," as used herein, refer to a  
nucleotide, oligonucleotide, polynucleotide, or any fragment thereof. These phrases also  
35 refer to DNA or RNA of genomic or synthetic origin which may be single-stranded or  
double-stranded and may represent the sense or the antisense strand, to peptide nucleic  
acid (PNA), or to any DNA-like or RNA-like material. In this context, "fragments" refers  
25 to those nucleic acid sequences which, comprise a region of unique polynucleotide  
sequence that specifically identifies SEQ ID NO:135-268, for example, as distinct from  
any other sequence in the same genome. For example, a fragment of SEQ ID NO:135-268  
is useful in hybridization and amplification technologies and in analogous methods that  
40 distinguish SEQ ID NO:135-268 from related polynucleotide sequences. A fragment of  
45 SEQ ID NO:135-268 is at least about 15-20 nucleotides in length. The precise length of  
30 the fragment of SEQ ID NO:135-268 and the region of SEQ ID NO:135-268 to which the  
fragment corresponds are routinely determinable by one of ordinary skill in the art based

5 on the intended purpose for the fragment. In some cases, a fragment, when translated, would produce polypeptides retaining some functional characteristic, e.g., antigenicity, or structural domain characteristic, e.g., ATP-binding site, of the full-length polypeptide.

10 The terms "operably associated" or "operably linked" refer to functionally related nucleic acid sequences. A promoter is operably associated or operably linked with a coding sequence if the promoter controls the translation of the encoded polypeptide. While operably associated or operably linked nucleic acid sequences can be contiguous and in the same reading frame, certain genetic elements, e.g., repressor genes, are not contiguously linked to the sequence encoding the polypeptide but still bind to operator  
15 sequences that control expression of the polypeptide.

20 The term "oligonucleotide" refers to a nucleic acid sequence of at least about 6 nucleotides to 60 nucleotides, preferably about 15 to 30 nucleotides, and most preferably about 20 to 25 nucleotides, which can be used in PCR amplification or in a hybridization assay or microarray. "Oligonucleotide" is substantially equivalent to the terms  
25 "amplimer," "primer," "oligomer," and "probe," as these terms are commonly defined in the art.

30 "Peptide nucleic acid" (PNA) refers to an antisense molecule or anti-gene agent which comprises an oligonucleotide of at least about 5 nucleotides in length linked to a peptide backbone of amino acid residues ending in lysine. The terminal lysine confers  
20 solubility to the composition. PNAs preferentially bind complementary single stranded DNA or RNA and stop transcript elongation, and may be pegylated to extend their lifespan in the cell.

35 The term "sample" is used in its broadest sense. A sample suspected of containing nucleic acids encoding HSPP, or fragments thereof, or HSPP itself, may comprise a bodily fluid; an extract from a cell, chromosome, organelle, or membrane isolated from a cell; a  
40 cell; genomic DNA, RNA, or cDNA, in solution or bound to a substrate; a tissue; a tissue print; etc.

45 The terms "specific binding" or "specifically binding" refer to that interaction between a protein or peptide and an agonist, an antibody, or an antagonist. The interaction  
30 is dependent upon the presence of a particular structure of the protein, e.g., the antigenic determinant or epitope, recognized by the binding molecule. For example, if an antibody is specific for epitope "A," the presence of a polypeptide containing the epitope A, or the  
50

5 presence of free unlabeled A, in a reaction containing free labeled A and the antibody will reduce the amount of labeled A that binds to the antibody:

10 The term "stringent conditions" refers to conditions which permit hybridization between polynucleotides and the claimed polynucleotides. Stringent conditions can be defined by salt concentration, the concentration of organic solvent, e.g., formamide, temperature, and other conditions well known in the art. In particular, stringency can be increased by reducing the concentration of salt, increasing the concentration of formamide, or raising the hybridization temperature.

15 The term "substantially purified" refers to nucleic acid or amino acid sequences that are removed from their natural environment and are isolated or separated, and are at least about 60% free, preferably about 75% free, and most preferably about 90% free from other components with which they are naturally associated.

20 A "substitution" refers to the replacement of one or more amino acids or nucleotides by different amino acids or nucleotides, respectively.

25 "Substrate" refers to any suitable rigid or semi-rigid support including membranes, filters, chips, slides, wafers, fibers, magnetic or nonmagnetic beads, gels, tubing, plates, polymers, microparticles and capillaries. The substrate can have a variety of surface forms, such as wells, trenches, pins, channels and pores, to which polynucleotides or polypeptides are bound.

30 "Transformation" describes a process by which exogenous DNA enters and changes a recipient cell. Transformation may occur under natural or artificial conditions according to various methods well known in the art, and may rely on any known method for the insertion of foreign nucleic acid sequences into a prokaryotic or eukaryotic host cell. The method for transformation is selected based on the type of host cell being transformed and may include, but is not limited to, viral infection, electroporation, heat shock, lipofection, and particle bombardment. The term "transformed" cells includes stably transformed cells in which the inserted DNA is capable of replication either as an autonomously replicating plasmid or as part of the host chromosome, as well as transiently transformed cells which express the inserted DNA or RNA for limited periods of time.

35 A "variant" of HSPP polypeptides refers to an amino acid sequence that is altered by one or more amino acid residues. The variant may have "conservative" changes, wherein a substituted amino acid has similar structural or chemical properties (e.g.,



5 replacement of leucine with isoleucine). More rarely, a variant may have  
"nonconservative" changes (e.g., replacement of glycine with tryptophan). Analogous  
minor variations may also include amino acid deletions or insertions, or both. Guidance in  
10 determining which amino acid residues may be substituted, inserted, or deleted without  
abolishing biological or immunological activity may be found using computer programs  
well known in the art, for example, LASERGENE software (DNASTAR).

The term "variant," when used in the context of a polynucleotide sequence, may  
15 encompass a polynucleotide sequence related to HSPP. This definition may also include,  
for example, "allelic" (as defined above), "splice," "species," or "polymorphic" variants.  
A splice variant may have significant identity to a reference molecule, but will generally  
20 have a greater or lesser number of polynucleotides due to alternate splicing of exons  
during mRNA processing. The corresponding polypeptide may possess additional  
functional domains or an absence of domains. Species variants are polynucleotide  
sequences that vary from one species to another. The resulting polypeptides generally will  
25 have significant amino acid identity relative to each other. A polymorphic variant is a  
variation in the polynucleotide sequence of a particular gene between individuals of a  
given species. Polymorphic variants also may encompass "single nucleotide  
polymorphisms" (SNPs) in which the polynucleotide sequence varies by one base. The  
30 presence of SNPs may be indicative of, for example, a certain population, a disease state,  
or a propensity for a disease state.

### 35 THE INVENTION

The invention is based on the discovery of new human signal peptide-containing  
proteins (HSPP), the polynucleotides encoding HSPP, and the use of these compositions  
25 for the diagnosis, treatment, or prevention of cell proliferative disorders including cancer;  
inflammation; and cardiovascular, neurological, reproductive, and developmental  
disorders.

Table 1 lists the Incyte Clones used to derive full length nucleotide sequences  
45 encoding HSPP. Columns 1 and 2 show the sequence identification numbers (SEQ ID  
NO) of the amino acid and nucleic acid sequences, respectively. Column 3 shows the  
Clone ID of the Incyte Clone in which nucleic acids encoding each HSPP were identified,  
and column 4, the cDNA libraries from which these clones were isolated. Column 5  
50

shows Incyte clones, their corresponding cDNA libraries, and shotgun sequences. The clones and shotgun sequences are part of the consensus nucleotide sequence of each HSPP and are useful as fragments in hybridization technologies.

Table 6 shows the regions of the full-length nucleotide sequences of HSPP to which cDNA fragments of Table 1 correspond. Column 1 lists nucleotide sequence identifiers and column 2 shows the clone ID of the Incyte clone in which nucleic acids encoding each HSPP were identified. Column 3 shows Incyte clones and shotgun sequences which are part of the consensus nucleotide sequence of each HSPP and are useful as fragments in hybridization technologies. Column 4 lists the starting nucleotide position and column 5 the ending nucleotide position of the region of the full-length HSPP to which the cDNA fragment corresponds.

The columns of Table 2 show various properties of the polypeptides of the invention: column 1 references the SEQ ID NO; column 2 shows the number of amino acid residues in each polypeptide; column 3, potential phosphorylation sites; column 4, potential glycosylation sites; column 5, the amino acid residues comprising signature sequences and motifs; column 6, the identity of each protein; and column 7, analytical methods used to identify each HSPP as a signal peptide-containing protein. Note that in column 5, the first line of each cell lists the amino acid residues comprising predicted signal peptide sequences. Additional identifying motifs or signatures are also listed in column 5. Of particular note is the presence of a glycosyl hydrolase family 9 active site signature in SEQ ID NO:126, a ribosomal protein S18 signature in SEQ ID NO:127, an adrenodoxin family iron-sulfur binding region signature and a cytochrome c family heme-binding site signature in SEQ ID NO:132, and a urotensin II signature sequence in SEQ ID NO:96.

Using BLAST, SEQ ID NO:68 (HSPP-68) has been identified as a TWIK-related acid-sensitive K<sup>+</sup> channel, and SEQ ID NO:92 (HSPP-92) has been identified as a tyrosine-specific protein phosphatase. The tyrosine-specific protein phosphatases signature in SEQ ID NO:92 (HSPP-92) from about V328 through about F340 (including the putative active site cysteine residue at C330) was identified using BLOCKS and PRINTS. Also of note is the identification of SEQ ID NO:66 (HSPP-66) as a steroid binding protein using BLAST.

5 The columns of Table 3 show the tissue-specificity and diseases, disorders, or  
conditions associated with nucleotide sequences encoding HSPP. The first column of  
Table 3 lists the nucleotide sequence identifiers. The second column lists tissue categories  
10 which express HSPP as a fraction of total tissue categories expressing HSPP. The third  
5 column lists the diseases, disorders, or conditions associated with those tissues expressing  
HSPP. The fourth column lists the vectors used to subclone the cDNA library. Of  
particular note is the expression of SEQ ID NO:200, SEQ ID NO:203, and SEQ ID  
15 NO:225 in lung tissues; the expression of SEQ ID NO:212, SEQ ID NO:216, and SEQ ID  
NO:220 in reproductive tissues; the expression of SEQ ID NO:223 in cancerous tissues;  
10 the expression of SEQ ID NO:232 in gastrointestinal tissue, specifically the small intestine  
or colon (fifteen out of sixteen (93.8%) cDNA libraries); and the expression of SEQ ID  
20 NO:224 in cancerous and proliferating tissues. Also of particular interest is the tissue-  
specific expression of SEQ ID NO:252 and SEQ ID NO:257. SEQ ID NO:252 is derived  
from OVARIUT01, an ovarian tumor cDNA library and is exclusively expressed in  
25 reproductive tumor tissue. SEQ ID NO:257 is derived from THP1AZT01, a  
5-aza-2'-deoxycytidine treated human promonocyte cDNA library and is exclusively  
expressed in hematopoietic tissue.

30 The following fragments of the nucleotide sequences encoding HSPP are useful in  
hybridization or amplification technologies to identify SEQ ID NO:135-268 and to  
20 distinguish between SEQ ID NO:135-268 and related polynucleotide sequences. The  
useful fragments are the fragment of SEQ ID NO:230 from about nucleotide 75 to about  
35 nucleotide 104; the fragment of SEQ ID NO:231 from about nucleotide 210 to about  
nucleotide 239; the fragment of SEQ ID NO:232 from about nucleotide 157 to about  
nucleotide 186; the fragment of SEQ ID NO:233 from about nucleotide 268 to about  
25 nucleotide 297; the fragment of SEQ ID NO:234 from about nucleotide 160 to about  
40 nucleotide 186; the fragment of SEQ ID NO:235 from about nucleotide 201 to about  
nucleotide 230; the fragment of SEQ ID NO:236 from about nucleotide 165 to about  
nucleotide 194; the fragment of SEQ ID NO:237 from about nucleotide 366 to about  
45 nucleotide 395; the fragment of SEQ ID NO:238 from about nucleotide 714 to about  
30 nucleotide 743; the fragment of SEQ ID NO:239 from about nucleotide 1731 to about  
nucleotide 1760; the fragment of SEQ ID NO:240 from about nucleotide 419 to about  
nucleotide 448; the fragment of SEQ ID NO:241 from about nucleotide 494 to about  
50

5 nucleotide 523; the fragment of SEQ ID NO:242 from about nucleotide 100 to about  
nucleotide 129; the fragment of SEQ ID NO:243 from about nucleotide 104 to about  
nucleotide 133; the fragment of SEQ ID NO:244 from about nucleotide 136 to about  
10 nucleotide 165; the fragment of SEQ ID NO:245 from about nucleotide 140 to about  
5 nucleotide 169; the fragment of SEQ ID NO:246 from about nucleotide 125 to about  
nucleotide 154; the fragment of SEQ ID NO:247 from about nucleotide 687 to about  
nucleotide 758; the fragment of SEQ ID NO:248 from about nucleotide 327 to about  
15 nucleotide 398; the fragment of SEQ ID NO:249 from about nucleotide 741 to about  
nucleotide 785; the fragment of SEQ ID NO:250 from about nucleotide 184 to about  
10 nucleotide 255; the fragment of SEQ ID NO:251 from about nucleotide 165 to about  
nucleotide 242; the fragment of SEQ ID NO:252 from about nucleotide 271 to about  
20 nucleotide 342; the fragment of SEQ ID NO:253 from about nucleotide 1081 to about  
nucleotide 1152; the fragment of SEQ ID NO:254 from about nucleotide 781 to about  
nucleotide 852; the fragment of SEQ ID NO:255 from about nucleotide 620 to about  
25 nucleotide 691; the fragment of SEQ ID NO:256 from about nucleotide 872 to about  
nucleotide 916; the fragment of SEQ ID NO:257 from about nucleotide 242 to about  
nucleotide 313; the fragment of SEQ ID NO:258 from about nucleotide 595 to about  
nucleotide 648; the fragment of SEQ ID NO:259 from about nucleotide 163 to about  
30 nucleotide 216; the fragment of SEQ ID NO:260 from about nucleotide 244 to about  
20 nucleotide 315; the fragment of SEQ ID NO:261 from about nucleotide 75 to about  
nucleotide 128; the fragment of SEQ ID NO:262 from about nucleotide 650 to about  
nucleotide 703; the fragment of SEQ ID NO:263 from about nucleotide 143 to about  
35 nucleotide 214; the fragment of SEQ ID NO:264 from about nucleotide 434 to about  
nucleotide 487; the fragment of SEQ ID NO:265 from about nucleotide 218 to about  
25 nucleotide 271; the fragment of SEQ ID NO:266 from about nucleotide 89 to about  
40 nucleotide 145; the fragment of SEQ ID NO:267 from about nucleotide 198 to about  
nucleotide 254; and the fragment of SEQ ID NO:268 from about nucleotide 10 to about  
nucleotide 54.

45 The invention also encompasses HSPP variants. A preferred HSPP variant is one  
30 which has at least about 80%, more preferably at least about 90%, and most preferably at  
least about 95% amino acid sequence identity to the HSPP amino acid sequence, and  
which contains at least one functional or structural characteristic of HSPP.  
50

5 The invention also encompasses polynucleotides which encode HSPP. In a particular embodiment, the invention encompasses a polynucleotide sequence comprising a sequence selected from the group consisting of SEQ ID NO:135-268, which encodes HSPP.

10 5 The invention also encompasses a variant of a polynucleotide sequence encoding HSPP. In particular, such a variant polynucleotide sequence will have at least about 80%, more preferably at least about 90%, and most preferably at least about 95% polynucleotide sequence identity to the polynucleotide sequence encoding HSPP. A particular aspect of the invention encompasses a variant of a polynucleotide sequence comprising a sequence  
15 selected from the group consisting of SEQ ID NO:135-268 which has at least about 80%, more preferably at least about 90%, and most preferably at least about 95% polynucleotide sequence identity to a nucleic acid sequence selected from the group consisting of SEQ ID NO:135-268. Any one of the polynucleotide variants described above can encode an amino acid sequence which contains at least one functional or structural characteristic of  
20 HSPP.

25 It will be appreciated by those skilled in the art that as a result of the degeneracy of the genetic code, a multitude of polynucleotide sequences encoding HSPP, some bearing minimal similarity to the polynucleotide sequences of any known and naturally occurring gene, may be produced. Thus, the invention contemplates each and every possible  
30 variation of polynucleotide sequence that could be made by selecting combinations based on possible codon choices. These combinations are made in accordance with the standard triplet genetic code as applied to the polynucleotide sequence of naturally occurring HSPP, and all such variations are to be considered as being specifically disclosed.

35 Although nucleotide sequences which encode HSPP and its variants are preferably  
40 25 capable of hybridizing to the nucleotide sequence of the naturally occurring HSPP under appropriately selected conditions of stringency, it may be advantageous to produce nucleotide sequences encoding HSPP or its derivatives possessing a substantially different codon usage, e.g., inclusion of non-naturally occurring codons. Codons may be selected to increase the rate at which expression of the peptide occurs in a particular prokaryotic or  
45 eukaryotic host in accordance with the frequency with which particular codons are utilized by the host. Other reasons for substantially altering the nucleotide sequence encoding HSPP and its derivatives without altering the encoded amino acid sequences include the  
50

5 production of RNA transcripts having more desirable properties, such as a greater half-life, than transcripts produced from the naturally occurring sequence.

The invention also encompasses production of DNA sequences which encode HSPP and HSPP derivatives, or fragments thereof, entirely by synthetic chemistry. After  
10 production, the synthetic sequence may be inserted into any of the many available expression vectors and cell systems using reagents well known in the art. Moreover, synthetic chemistry may be used to introduce mutations into a sequence encoding HSPP or  
15 any fragment thereof.

Also encompassed by the invention are polynucleotide sequences that are capable  
10 of hybridizing to the claimed polynucleotide sequences, and, in particular, to those shown in SEQ ID NO:135-268 and fragments thereof under various conditions of stringency. (See, e.g., Wahl, G.M. and S.L. Berger (1987) *Methods Enzymol.* 152:399-407; Kimmel, A.R. (1987) *Methods Enzymol.* 152:507-511.) For example, stringent salt concentration will ordinarily be less than about 750 mM NaCl and 75 mM trisodium citrate, preferably  
20 less than about 500 mM NaCl and 50 mM trisodium citrate, and most preferably less than about 250 mM NaCl and 25 mM trisodium citrate. Low stringency hybridization can be obtained in the absence of organic solvent, e.g., formamide, while high stringency hybridization can be obtained in the presence of at least about 35% formamide, and most preferably at least about 50% formamide. Stringent temperature conditions will ordinarily  
25 include temperatures of at least about 30°C, more preferably of at least about 37°C, and most preferably of at least about 42°C. Varying additional parameters, such as hybridization time, the concentration of detergent, e.g., sodium dodecyl sulfate (SDS), and the inclusion or exclusion of carrier DNA, are well known to those skilled in the art. Various levels of stringency are accomplished by combining these various conditions as  
30 needed. In a preferred embodiment, hybridization will occur at 30°C in 750 mM NaCl, 75 mM trisodium citrate, and 1% SDS. In a more preferred embodiment, hybridization will occur at 37°C in 500 mM NaCl, 50 mM trisodium citrate, 1% SDS, 35% formamide, and 100 µg/ml denatured salmon sperm DNA (ssDNA). In a most preferred embodiment, hybridization will occur at 42°C in 250 mM NaCl, 25 mM trisodium citrate, 1% SDS, 50  
35 % formamide, and 200 µg/ml ssDNA. Useful variations on these conditions will be readily apparent to those skilled in the art.

5           The washing steps which follow hybridization can also vary in stringency. Wash  
stringency conditions can be defined by salt concentration and by temperature. As above,  
wash stringency can be increased by decreasing salt concentration or by increasing  
10           temperature. For example, stringent salt concentration for the wash steps will preferably  
5           be less than about 30 mM NaCl and 3 mM trisodium citrate, and most preferably less than  
about 15 mM NaCl and 1.5 mM trisodium citrate. Stringent temperature conditions for  
the wash steps will ordinarily include temperature of at least about 25°C, more preferably  
15           of at least about 42°C, and most preferably of at least about 68°C. In a preferred  
embodiment, wash steps will occur at 25°C in 30 mM NaCl, 3 mM trisodium citrate, and  
10           0.1% SDS. In a more preferred embodiment, wash steps will occur at 42°C in 15 mM  
NaCl, 1.5 mM trisodium citrate, and 0.1% SDS. In a most preferred embodiment, wash  
20           steps will occur at 68°C in 15 mM NaCl, 1.5 mM trisodium citrate, and 0.1% SDS.  
Additional variations on these conditions will be readily apparent to those skilled in the  
art.

25           15           Methods for DNA sequencing are well known in the art and may be used to  
practice any of the embodiments of the invention. The methods may employ such  
enzymes as the Klenow fragment of DNA polymerase I, SEQUENASE (US Biochemical,  
Cleveland OH), Taq polymerase (Perkin-Elmer), thermostable T7 polymerase (Amersham  
30           Pharmacia Biotech, Piscataway NJ), or combinations of polymerases and proofreading  
20           exonucleases such as those found in the ELONGASE amplification system (Life  
Technologies, Gaithersburg MD). Preferably, sequence preparation is automated with  
machines such as the Hamilton MICROLAB 2200 (Hamilton, Reno NV), Peltier Thermal  
35           Cycler 200 (PTC200; MJ Research, Watertown MA) and the ABI CATALYST 800  
(Perkin-Elmer). Sequencing is then carried out using either ABI 373 or 377 DNA  
25           sequencing systems (Perkin-Elmer) or the MEGABACE 1000 DNA sequencing system  
40           (Molecular Dynamics, Sunnyvale CA). The resulting sequences are analyzed using a  
variety of algorithms which are well known in the art. (See, e.g., Ausubel, F.M. (1997)  
Short Protocols in Molecular Biology, John Wiley & Sons, New York NY, unit 7.7;  
45           Meyers, R.A. (1995) Molecular Biology and Biotechnology, Wiley VCH, New York NY,  
30           pp. 856-853.)

          The nucleic acid sequences encoding HSPP may be extended utilizing a partial  
50           nucleotide sequence and employing various PCR-based methods known in the art to detect

5 upstream sequences, such as promoters and regulatory elements. For example, one  
method which may be employed, restriction-site PCR, uses universal and nested primers  
to amplify unknown sequence from genomic DNA within a cloning vector. (See, e.g.,  
10 Sarkar, G. (1993) PCR Methods Applic. 2:318-322.) Another method, inverse PCR, uses  
primers that extend in divergent directions to amplify unknown sequence from a  
circularized template. The template is derived from restriction fragments comprising a  
known genomic locus and surrounding sequences. (See, e.g., Triglia, T. et al. (1988)  
15 Nucleic Acids Res. 16:8186.) A third method, capture PCR, involves PCR amplification  
of DNA fragments adjacent to known sequences in human and yeast artificial chromosome  
DNA. (See, e.g., Lagerstrom, M. et al. (1991) PCR Methods Applic. 1:111-119.) In this  
20 method, multiple restriction enzyme digestions and ligations may be used to insert an  
engineered double-stranded sequence into a region of unknown sequence before  
performing PCR. Other methods which may be used to retrieve unknown sequences are  
known in the art. (See, e.g., Parker, J.D. et al. (1991) Nucleic Acids Res. 19:3055-306).  
25 Additionally, one may use PCR, nested primers, and PROMOTERFINDER libraries  
(Clontech, Palo Alto CA) to walk genomic DNA. This procedure avoids the need to  
screen libraries and is useful in finding intron/exon junctions. For all PCR-based methods,  
primers may be designed using commercially available software, such as OLIGO 4.06  
30 Primer Analysis software (National Biosciences, Plymouth MN) or another appropriate  
program, to be about 22 to 30 nucleotides in length, to have a GC content of about 50% or  
more, and to anneal to the template at temperatures of about 68°C to 72°C.

35 When screening for full-length cDNAs, it is preferable to use libraries that have  
been size-selected to include larger cDNAs. In addition, random-primed libraries, which  
often include sequences containing the 5' regions of genes, are preferable for situations in  
25 which an oligo d(T) library does not yield a full-length cDNA. Genomic libraries may be  
useful for extension of sequence into 5' non-transcribed regulatory regions.

40 Capillary electrophoresis systems which are commercially available may be used  
to analyze the size or confirm the nucleotide sequence of sequencing or PCR products. In  
particular, capillary sequencing may employ flowable polymers for electrophoretic  
45 separation, four different nucleotide-specific, laser-stimulated fluorescent dyes, and a  
charge coupled device camera for detection of the emitted wavelengths. Output/light  
30 intensity may be converted to electrical signal using appropriate software (e.g.,  
50



5 GENOTYPER and SEQUENCE NAVIGATOR, Perkin-Elmer), and the entire process from loading of samples to computer analysis and electronic data display may be computer controlled. Capillary electrophoresis is especially preferable for sequencing small DNA  
10 fragments which may be present in limited amounts in a particular sample.

5 In another embodiment of the invention, polynucleotide sequences or fragments thereof which encode HSPP may be cloned in recombinant DNA molecules that direct expression of HSPP, or fragments or functional equivalents thereof, in appropriate host  
15 cells. Due to the inherent degeneracy of the genetic code, other DNA sequences which encode substantially the same or a functionally equivalent amino acid sequence may be produced and used to express HSPP.  
10

20 The nucleotide sequences of the present invention can be engineered using methods generally known in the art in order to alter HSPP-encoding sequences for a variety of purposes including, but not limited to, modification of the cloning, processing, and/or expression of the gene product. DNA shuffling by random fragmentation and PCR  
25 reassembly of gene fragments and synthetic oligonucleotides may be used to engineer the nucleotide sequences. For example, oligonucleotide-mediated site-directed mutagenesis may be used to introduce mutations that create new restriction sites, alter glycosylation patterns, change codon preference, produce splice variants, and so forth.  
30

30 In another embodiment, sequences encoding HSPP may be synthesized, in whole or in part, using chemical methods well known in the art. (See, e.g., Caruthers, M.H. et al. (1980) Nucl. Acids Res. Symp. Ser. 215-223, and Horn, T. et al. (1980) Nucl. Acids Res. Symp. Ser. 225-232.) Alternatively, HSPP itself or a fragment thereof may be synthesized  
35 using chemical methods. For example, peptide synthesis can be performed using various solid-phase techniques. (See, e.g., Roberge, J.Y. et al. (1995) Science 269:202-204.) Automated synthesis may be achieved using the ABI 431A Peptide Synthesizer (Perkin-  
40 Elmer). Additionally, the amino acid sequence of HSPP, or any part thereof, may be altered during direct synthesis and/or combined with sequences from other proteins, or any part thereof, to produce a variant polypeptide.

45 The peptide may be substantially purified by preparative high performance liquid chromatography. (See, e.g., Chicz, R.M. and F.Z. Regnier (1990) Methods Enzymol. 182:392-421.) The composition of the synthetic peptides may be confirmed by amino acid  
50

5 analysis or by sequencing. (See, e.g., Creighton, T. (1984) Proteins, Structures and Molecular Properties, WH Freeman, New York NY.)

10 In order to express a biologically active HSPP, the nucleotide sequences encoding HSPP or derivatives thereof may be inserted into an appropriate expression vector, i.e., a  
5 vector which contains the necessary elements for transcriptional and translational control of the inserted coding sequence in a suitable host. These elements include regulatory sequences, such as enhancers, constitutive and inducible promoters, and 5' and 3' untranslated regions in the vector and in polynucleotide sequences encoding HSPP. Such elements may vary in their strength and specificity. Specific initiation signals may also be  
15 used to achieve more efficient translation of sequences encoding HSPP. Such signals include the ATG initiation codon and adjacent sequences, e.g. the Kozak sequence. In cases where sequences encoding HSPP and its initiation codon and upstream regulatory sequences are inserted into the appropriate expression vector, no additional transcriptional or translational control signals may be needed. However, in cases where only coding  
20 sequence, or a fragment thereof, is inserted, exogenous translational control signals including an in-frame ATG initiation codon should be provided by the vector. Exogenous translational elements and initiation codons may be of various origins, both natural and synthetic. The efficiency of expression may be enhanced by the inclusion of enhancers appropriate for the particular host cell system used. (See, e.g., Scharf, D. et al. (1994) Results Probl. Cell Differ. 20:125-162.)

35 Methods which are well known to those skilled in the art may be used to construct expression vectors containing sequences encoding HSPP and appropriate transcriptional and translational control elements. These methods include in vitro recombinant DNA techniques, synthetic techniques, and in vivo genetic recombination. (See, e.g., Sambrook,  
40 J. et al. (1989) Molecular Cloning. A Laboratory Manual, Cold Spring Harbor Press, Plainview NY, ch. 4, 8, and 16-17; Ausubel, F.M. et al. (1995) Current Protocols in Molecular Biology, John Wiley & Sons, New York NY, ch. 9, 13, and 16.)

45 A variety of expression vector/host systems may be utilized to contain and express sequences encoding HSPP. These include, but are not limited to, microorganisms such as  
30 bacteria transformed with recombinant bacteriophage, plasmid, or cosmid DNA expression vectors; yeast transformed with yeast expression vectors; insect cell systems infected with viral expression vectors (e.g., baculovirus); plant cell systems transformed with viral

5 expression vectors (e.g., cauliflower mosaic virus, CaMV, or tobacco mosaic virus, TMV)  
or with bacterial expression vectors (e.g., Ti or pBR322 plasmids); or animal cell systems.  
The invention is not limited by the host cell employed.

10 In bacterial systems, a number of cloning and expression vectors may be selected  
5 depending upon the use intended for polynucleotide sequences encoding HSPP. For  
example, routine cloning, subcloning, and propagation of polynucleotide sequences  
encoding HSPP can be achieved using a multifunctional *E. coli* vector such as  
15 PBLUESCRIPT (Stratagene, La Jolla CA) or pSPORT1 plasmid (Life Technologies).  
Ligation of sequences encoding HSPP into the vector's multiple cloning site disrupts the  
10 *lacZ* gene, allowing a colorimetric screening procedure for identification of transformed  
bacteria containing recombinant molecules. In addition, these vectors may be useful for *in*  
20 *vitro* transcription, dideoxy sequencing, single strand rescue with helper phage, and  
creation of nested deletions in the cloned sequence. (See, e.g., Van Hecke, G. and S.M.  
Schuster (1989) J. Biol. Chem. 264:5503-5509.) When large quantities of HSPP are  
25 needed, e.g. for the production of antibodies, vectors which direct high level expression of  
HSPP may be used. For example, vectors containing the strong, inducible T5 or T7  
bacteriophage promoter may be used.

30 Yeast expression systems may be used for production of HSPP. A number of  
vectors containing constitutive or inducible promoters, such as alpha factor, alcohol  
20 oxidase, and PGH, may be used in the yeast *Saccharomyces cerevisiae* or *Pichia pastoris*.  
In addition, such vectors direct either the secretion or intracellular retention of expressed  
35 proteins and enable integration of foreign sequences into the host genome for stable  
propagation. (See, e.g., Ausubel, 1995, *supra*; Grant et al. (1987) Methods Enzymol.  
153:516-54; and Scorer, C. A. et al. (1994) Bio/Technology 12:181-184.)

40 Plant systems may also be used for expression of HSPP. Transcription of  
sequences encoding HSPP may be driven viral promoters, e.g., the 35S and 19S promoters  
of CaMV used alone or in combination with the omega leader sequence from TMV  
(Takamatsu, N. (1987) EMBO J. 6:307-311). Alternatively, plant promoters such as the  
45 small subunit of RUBISCO or heat shock promoters may be used. (See, e.g., Coruzzi, G.  
30 et al. (1984) EMBO J. 3:1671-1680; Broglie, R. et al. (1984) Science 224:838-843; and  
Winter, J. et al. (1991) Results Probl. Cell Differ. 17:85-105.) These constructs can be  
introduced into plant cells by direct DNA transformation or pathogen-mediated  
50

transfection. (See, e.g., The McGraw Hill Yearbook of Science and Technology (1992) McGraw Hill, New York NY, pp. 191-196.)

In mammalian cells, a number of viral-based expression systems may be utilized. In cases where an adenovirus is used as an expression vector, sequences encoding HSPP may be ligated into an adenovirus transcription/translation complex consisting of the late promoter and tripartite leader sequence. Insertion in a non-essential E1 or E3 region of the viral genome may be used to obtain infective virus which expresses HSPP in host cells. (See, e.g., Logan, J. and T. Shenk (1984) *Proc. Natl. Acad. Sci.* 81:3655-3659.) In addition, transcription enhancers, such as the Rous sarcoma virus (RSV) enhancer, may be used to increase expression in mammalian host cells. SV40 or EBV-based vectors may also be used for high-level protein expression.

Human artificial chromosomes (HACs) may also be employed to deliver larger fragments of DNA than can be contained in and expressed from a plasmid. HACs of about 6 kb to 10 Mb are constructed and delivered via conventional delivery methods (liposomes, polycationic amino polymers, or vesicles) for therapeutic purposes. (See, e.g., Harrington, J.J. et al. (1997) *Nat Genet.* 15:345-355.)

For long term production of recombinant proteins in mammalian systems, stable expression of HSPP in cell lines is preferred. For example, sequences encoding HSPP can be transformed into cell lines using expression vectors which may contain viral origins of replication and/or endogenous expression elements and a selectable marker gene on the same or on a separate vector. Following the introduction of the vector, cells may be allowed to grow for about 1 to 2 days in enriched media before being switched to selective media. The purpose of the selectable marker is to confer resistance to a selective agent, and its presence allows growth and recovery of cells which successfully express the introduced sequences. Resistant clones of stably transformed cells may be propagated using tissue culture techniques appropriate to the cell type.

Any number of selection systems may be used to recover transformed cell lines. These include, but are not limited to, the herpes simplex virus thymidine kinase and adenine phosphoribosyltransferase genes, for use in *tk* or *apr* cells, respectively. (See, e.g., Wigler, M. et al. (1977) *Cell* 11:223-232; Lowy, I. et al. (1980) *Cell* 22:817-823.) Also, antimetabolite, antibiotic, or herbicide resistance can be used as the basis for selection. For example, *dhfr* confers resistance to methotrexate; *neo* confers resistance to

5 the aminoglycosides, neomycin and G-418; and *als* or *pat* confer resistance to  
chlorosulfuron and phosphinotricin acetyltransferase, respectively. (See, e.g., Wigler, M. et  
al. (1980) Proc. Natl. Acad. Sci. 77:3567-3570; Colbere-Garapin, F. et al. (1981) J. Mol.  
10 Biol. 150:1-14.) Additional selectable genes have been described, e.g., *trpB* and *hisD*,  
5 which alter cellular requirements for metabolites. (See, e.g., Hartman, S.C. and R.C.  
Mulligan (1988) Proc. Natl. Acad. Sci. 85:8047-8051.) Visible markers, e.g.,  
anthocyanins, green fluorescent proteins (GFP; Clontech),  $\beta$  glucuronidase and its  
15 substrate  $\beta$ -glucuronide, or luciferase and its substrate luciferin may be used. These  
markers can be used not only to identify transformants, but also to quantify the amount of  
10 transient or stable protein expression attributable to a specific vector system. (See, e.g.,  
Rhodes, C.A. (1995) Methods Mol. Biol. 55:121-131.)

20 Although the presence/absence of marker gene expression suggests that the gene of  
interest is also present, the presence and expression of the gene may need to be confirmed.  
For example, if the sequence encoding HSPP is inserted within a marker gene sequence,  
25 15 transformed cells containing sequences encoding HSPP can be identified by the absence of  
marker gene function. Alternatively, a marker gene can be placed in tandem with a  
sequence encoding HSPP under the control of a single promoter. Expression of the  
marker gene in response to induction or selection usually indicates expression of the  
30 tandem gene as well.

20 In general, host cells that contain the nucleic acid sequence encoding HSPP and  
that express HSPP may be identified by a variety of procedures known to those of skill in  
35 the art. These procedures include, but are not limited to, DNA-DNA or DNA-RNA  
hybridizations, PCR amplification, and protein bioassay or immunoassay techniques  
which include membrane, solution, or chip based technologies for the detection and/or  
25 quantification of nucleic acid or protein sequences.

40 Immunological methods for detecting and measuring the expression of HSPP using  
either specific polyclonal or monoclonal antibodies are known in the art. Examples of  
such techniques include enzyme-linked immunosorbent assays (ELISAs),  
45 radioimmunoassays (RIAs), and fluorescence activated cell sorting (FACS). A two-site,  
30 monoclonal-based immunoassay utilizing monoclonal antibodies reactive to two  
non-interfering epitopes on HSPP is preferred, but a competitive binding assay may be  
employed. These and other assays are well known in the art. (See, e.g., Hampton, R. et al.

(1990) Serological Methods, a Laboratory Manual, APS Press, St Paul MN, Sect. IV; Coligan, J. E. et al. (1997) Current Protocols in Immunology, Greene Pub. Associates and Wiley-Interscience, New York NY; and Pound, J.D. (1998) Immunochemical Protocols, Humana Press, Totowa NJ).

A wide variety of labels and conjugation techniques are known by those skilled in the art and may be used in various nucleic acid and amino acid assays. Means for producing labeled hybridization or PCR probes for detecting sequences related to polynucleotides encoding HSPP include oligolabeling, nick translation, end-labeling, or PCR amplification using a labeled nucleotide. Alternatively, the sequences encoding HSPP, or any fragments thereof, may be cloned into a vector for the production of an mRNA probe. Such vectors are known in the art, are commercially available, and may be used to synthesize RNA probes *in vitro* by addition of an appropriate RNA polymerase such as T7, T3, or SP6 and labeled nucleotides. These procedures may be conducted using a variety of commercially available kits, such as those provided by Amersham Pharmacia Biotech, Promega (Madison WI), and US Biochemical. Suitable reporter molecules or labels which may be used for ease of detection include radionuclides, enzymes, fluorescent, chemiluminescent, or chromogenic agents, as well as substrates, cofactors, inhibitors, magnetic particles, and the like.

Host cells transformed with nucleotide sequences encoding HSPP may be cultured under conditions suitable for the expression and recovery of the protein from cell culture. The protein produced by a transformed cell may be secreted or retained intracellularly depending on the sequence and/or the vector used. As will be understood by those of skill in the art, expression vectors containing polynucleotides which encode HSPP may be designed to contain signal sequences which direct secretion of HSPP through a prokaryotic or eukaryotic cell membrane.

In addition, a host cell strain may be chosen for its ability to modulate expression of the inserted sequences or to process the expressed protein in the desired fashion. Such modifications of the polypeptide include, but are not limited to, acetylation, carboxylation, glycosylation, phosphorylation, lipidation, and acylation. Post-translational processing which cleaves a "prepro" form of the protein may also be used to specify protein targeting, folding, and/or activity. Different host cells which have specific cellular machinery and characteristic mechanisms for post-translational activities (e.g., CHO, HeLa, MDCK,

5 HEK293, and WI38), are available from the American Type Culture Collection (ATCC, Manassas, VA) and may be chosen to ensure the correct modification and processing of the foreign protein.

10 In another embodiment of the invention, natural, modified, or recombinant nucleic acid sequences encoding HSPP may be ligated to a heterologous sequence resulting in translation of a fusion protein in any of the aforementioned host systems. For example, a chimeric HSPP protein containing a heterologous moiety that can be recognized by a commercially available antibody may facilitate the screening of peptide libraries for inhibitors of HSPP activity. Heterologous protein and peptide moieties may also facilitate 15 purification of fusion proteins using commercially available affinity matrices. Such moieties include, but are not limited to, glutathione S-transferase (GST), maltose binding protein (MBP), thioredoxin (Trx), calmodulin binding peptide (CBP), 6-His, FLAG, *c-myc*, and hemagglutinin (HA). GST, MBP, Trx, CBP, and 6-His enable purification of their cognate fusion proteins on immobilized glutathione, maltose, phenylarsine oxide, 20 calmodulin, and metal-chelate resins, respectively. FLAG, *c-myc*, and hemagglutinin (HA) enable immunoaffinity purification of fusion proteins using commercially available monoclonal and polyclonal antibodies that specifically recognize these epitope tags. A fusion protein may also be engineered to contain a proteolytic cleavage site located between the HSPP encoding sequence and the heterologous protein sequence, so that 25 HSPP may be cleaved away from the heterologous moiety following purification. Methods for fusion protein expression and purification are discussed in Ausubel (1995, supra, ch 10). A variety of commercially available kits may also be used to facilitate expression and purification of fusion proteins.

30 In a further embodiment of the invention, synthesis of radiolabeled HSPP may be achieved in vitro using the TNT rabbit reticulocyte lysate or wheat germ extract systems (Promega). These systems couple transcription and translation of protein-coding sequences operably associated with the T7, T3, or SP6 promoters. Translation takes place in the presence of a radiolabeled amino acid precursor, preferably <sup>35</sup>S-methionine.

40 Fragments of HSPP may be produced not only by recombinant production, but also by direct peptide synthesis using solid-phase techniques. (See, e.g., Creighton, supra, pp. 55-60.) Protein synthesis may be performed by manual techniques or by automation. Automated synthesis may be achieved, for example, using the ABI 431A Peptide

Synthesizer (Perkin-Elmer). Various fragments of HSPP may be synthesized separately and then combined to produce the full length molecule.

## THERAPEUTICS

Chemical and structural similarity, e.g., in the context of sequences and motifs, exists between regions of HSPP and signal peptide sequences. In addition, chemical and structural similarity, in the context of sequences and motifs, exists between HSPP-66 and prostatic steroid-binding C3 precursor from rat (GI 206453); between HSPP-68 and TWIK-related acid-sensitive K<sup>+</sup>channel from human (GI 2465542); and between HSPP-92 and tyrosine specific protein phosphatases (PROSITE PDOC00323). In addition, the expression of HSPP is closely associated with proliferative, cancerous, inflamed, cardiovascular, nervous, reproductive, hematopoietic/immune, and developmental tissue. Therefore, HSPP appears to play a role in cell proliferative disorders including cancer; inflammation; and cardiovascular, neurological, reproductive, and developmental disorders. In the treatment of cell proliferative disorders including cancer; inflammation; and cardiovascular, neurological, reproductive, and developmental disorders associated with increased HSPP expression or activity, it is desirable to decrease the expression or activity of HSPP. In the treatment of the above conditions associated with decreased HSPP expression or activity, it is desirable to increase the expression or activity of HSPP.

Therefore, in one embodiment, HSPP or a fragment or derivative thereof may be administered to a subject to treat or prevent a disorder associated with decreased expression or activity of HSPP. Examples of such disorders include, but are not limited to, cell proliferative disorders such as actinic keratosis, arteriosclerosis, atherosclerosis, bursitis, cirrhosis, hepatitis, mixed connective tissue disease (MCTD), myelofibrosis, paroxysmal nocturnal hemoglobinuria, polycythemia vera, psoriasis, primary thrombocythemia, and cancers including adenocarcinoma, leukemia, lymphoma, melanoma, myeloma, sarcoma, teratocarcinoma, and, in particular, cancers of the adrenal gland, bladder, bone, bone marrow, brain, breast, cervix, gall bladder, ganglia, gastrointestinal tract, heart, kidney, liver, lung, muscle, ovary, pancreas, parathyroid, penis, prostate, salivary glands, skin, spleen, testis, thymus, thyroid, and uterus; inflammatory disorders, such as acquired immunodeficiency syndrome (AIDS), Addison's



5 disease. adult respiratory distress syndrome, allergies, ankylosing spondylitis, amyloidosis,  
anemia, asthma, atherosclerosis, autoimmune hemolytic anemia, autoimmune thyroiditis,  
autoimmune polyendocrinopathy-candidiasis-ectodermal dystrophy (APECED),  
10 bronchitis, cholecystitis, contact dermatitis, Crohn's disease, atopic dermatitis,  
5 dermatomyositis, diabetes mellitus, emphysema, episodic lymphopenia with  
lymphocytotoxins, erythroblastosis fetalis, erythema nodosum, atrophic gastritis,  
glomerulonephritis, Goodpasture's syndrome, gout, Graves' disease, Hashimoto's  
15 thyroiditis, hypereosinophilia, irritable bowel syndrome, multiple sclerosis, myasthenia  
gravis, myocardial or pericardial inflammation, osteoarthritis, osteoporosis, pancreatitis,  
10 polymyositis, psoriasis, Reiter's syndrome, rheumatoid arthritis, scleroderma, Sjögren's  
syndrome, systemic anaphylaxis, systemic lupus erythematosus, systemic sclerosis,  
20 thrombocytopenic purpura, ulcerative colitis, uveitis, Werner syndrome, complications of  
cancer, hemodialysis, and extracorporeal circulation, viral, bacterial, fungal, parasitic,  
protozoal, and helminthic infections, and trauma; cardiovascular disorders including  
25 disorders of the blood vessels such as arteriovenous fistula, atherosclerosis, hypertension,  
vasculitis, Raynaud's disease, aneurysms, arterial dissections, varicose veins,  
thrombophlebitis and phlebothrombosis, and vascular tumors; disorders of the heart such  
as congestive heart failure, ischemic heart disease, angina pectoris, myocardial infarction,  
30 hypertensive heart disease, degenerative valvular heart disease, calcific aortic valve  
stenosis, congenitally bicuspid aortic valve, mitral annular calcification, mitral valve  
prolapse, rheumatic fever and rheumatic heart disease, infective endocarditis, nonbacterial  
35 thrombotic endocarditis, endocarditis of systemic lupus erythematosus, carcinoid heart  
disease, cardiomyopathy, myocarditis, pericarditis, neoplastic heart disease, and congenital  
heart disease; and disorders of the lungs such as congenital lung anomalies, atelectasis,  
25 pulmonary congestion and edema, pulmonary embolism, pulmonary hemorrhage,  
pulmonary infarction, pulmonary hypertension, vascular sclerosis, obstructive pulmonary  
40 disease, restrictive pulmonary disease, chronic obstructive pulmonary disease,  
emphysema, chronic bronchitis, bronchial asthma, bronchiectasis, bacterial pneumonia,  
viral and mycoplasmal pneumonia, lung abscess, pulmonary tuberculosis, diffuse  
45 interstitial diseases, pneumoconioses, sarcoidosis, idiopathic pulmonary fibrosis,  
desquamative interstitial pneumonitis, hypersensitivity pneumonitis, pulmonary  
eosinophilia bronchiolitis obliterans-organizing pneumonia, diffuse pulmonary  
50

5 hemorrhage syndromes, Goodpasture's syndromes, idiopathic pulmonary hemosiderosis,  
pulmonary involvement in collagen-vascular disorders, pulmonary alveolar proteinosis,  
lung tumors, inflammatory and noninflammatory pleural effusions, pneumothorax, and  
10 pleural tumors; neurological disorders such as epilepsy, ischemic cerebrovascular disease,  
5 stroke, cerebral neoplasms, Alzheimer's disease, Pick's disease, Huntington's disease,  
dementia, Parkinson's disease and other extrapyramidal disorders, amyotrophic lateral  
sclerosis and other motor neuron disorders, progressive neural muscular atrophy, retinitis  
15 pigmentosa, hereditary ataxias, multiple sclerosis and other demyelinating diseases,  
bacterial and viral meningitis, brain abscess, subdural empyema, epidural abscess,  
10 suppurative intracranial thrombophlebitis, myelitis and radiculitis, viral central nervous  
system disease; prion diseases including kuru, Creutzfeldt-Jakob disease, and Gerstmann-  
20 Straussler-Scheinker syndrome; fatal familial insomnia, nutritional and metabolic diseases  
of the nervous system, neurofibromatosis, tuberous sclerosis, cerebelloretinal  
hemangioblastomatosis, encephalotrigeminal syndrome, mental retardation and other  
25 developmental disorders of the central nervous system, cerebral palsy, neuroskeletal  
disorders, autonomic nervous system disorders, cranial nerve disorders, spinal cord  
diseases, muscular dystrophy and other neuromuscular disorders, peripheral nervous  
system disorders, dermatomyositis and polymyositis; inherited, metabolic, endocrine, and  
30 toxic myopathies; myasthenia gravis, periodic paralysis; mental disorders including mood,  
20 anxiety, and schizophrenic disorders; akathisia, amnesia, catatonia, diabetic neuropathy,  
tardive dyskinesia, dystonias, paranoid psychoses, postherpetic neuralgia, and Tourette's  
disorder; reproductive disorders such as disorders of prolactin production; infertility,  
35 including tubal disease, ovulatory defects, and endometriosis; disruptions of the estrous  
cycle, disruptions of the menstrual cycle, polycystic ovary syndrome, ovarian  
25 hyperstimulation syndrome, endometrial and ovarian tumors, uterine fibroids, autoimmune  
disorders, ectopic pregnancies, and teratogenesis; cancer of the breast, fibrocystic breast  
disease, and galactorrhea; disruptions of spermatogenesis, abnormal sperm physiology,  
40 cancer of the testis, cancer of the prostate, benign prostatic hyperplasia, prostatitis,  
Peyronie's disease, carcinoma of the male breast, and gynecomastia; and developmental  
45 disorders, such as renal tubular acidosis, anemia, Cushing's syndrome, achondroplastic  
dwarfism, Duchenne and Becker muscular dystrophy, epilepsy, gonadal dysgenesis,  
WAGR syndrome (Wilms' tumor, aniridia, genitourinary abnormalities, and mental  
50

retardation), Smith-Magenis syndrome, myelodysplastic syndrome, hereditary mucoepithelial dysplasia, hereditary keratodermas, hereditary neuropathies such as Charcot-Marie-Tooth disease and neurofibromatosis, hypothyroidism, hydrocephalus, seizure disorders such as Sydenham's chorea and cerebral palsy, spina bifida, anencephaly, craniorachischisis, congenital glaucoma, cataract, and sensorineural hearing loss.

In another embodiment, a vector capable of expressing HSPP or a fragment or derivative thereof may be administered to a subject to treat or prevent a disorder associated with decreased expression or activity of HSPP including, but not limited to, those described above.

In a further embodiment, a pharmaceutical composition comprising a substantially purified HSPP in conjunction with a suitable pharmaceutical carrier may be administered to a subject to treat or prevent a disorder associated with decreased expression or activity of HSPP including, but not limited to, those provided above.

In still another embodiment, an agonist which modulates the activity of HSPP may be administered to a subject to treat or prevent a disorder associated with decreased expression or activity of HSPP including, but not limited to, those listed above.

In a further embodiment, an antagonist of HSPP may be administered to a subject to treat or prevent a disorder associated with increased expression or activity of HSPP.

Examples of such disorders include, but are not limited to, those described above. In one aspect, an antibody which specifically binds HSPP may be used directly as an antagonist or indirectly as a targeting or delivery mechanism for bringing a pharmaceutical agent to cells or tissue which express HSPP.

In an additional embodiment, a vector expressing the complement of the polynucleotide encoding HSPP may be administered to a subject to treat or prevent a disorder associated with increased expression or activity of HSPP including, but not limited to, those described above.

In other embodiments, any of the proteins, antagonists, antibodies, agonists, complementary sequences, or vectors of the invention may be administered in combination with other appropriate therapeutic agents. Selection of the appropriate agents for use in combination therapy may be made by one of ordinary skill in the art, according to conventional pharmaceutical principles. The combination of therapeutic agents may act

5 synergistically to effect the treatment or prevention of the various disorders described above. Using this approach, one may be able to achieve therapeutic efficacy with lower dosages of each agent, thus reducing the potential for adverse side effects.

10 An antagonist of HSPP may be produced using methods which are generally known in the art. In particular, purified HSPP may be used to produce antibodies or to screen libraries of pharmaceutical agents to identify those which specifically bind HSPP. Antibodies to HSPP may also be generated using methods that are well known in the art. Such antibodies may include, but are not limited to, polyclonal, monoclonal, chimeric, and single chain antibodies, Fab fragments, and fragments produced by a Fab expression library. Neutralizing antibodies (i.e., those which inhibit dimer formation) are especially preferred for therapeutic use.

20 For the production of antibodies, various hosts including goats, rabbits, rats, mice, humans, and others may be immunized by injection with HSPP or with any fragment or oligopeptide thereof which has immunogenic properties. Depending on the host species, various adjuvants may be used to increase immunological response. Such adjuvants include, but are not limited to, Freund's, mineral gels such as aluminum hydroxide, and surface active substances such as lysolecithin, pluronic polyols, polyanions, peptides, oil emulsions, KLH, and dinitrophenol. Among adjuvants used in humans, BCG (bacilli Calmette-Guerin) and Corvncbacterium parvum are especially preferable.

25 It is preferred that the oligopeptides, peptides, or fragments used to induce antibodies to HSPP have an amino acid sequence consisting of at least about 5 amino acids, and, more preferably, of at least about 10 amino acids. It is also preferable that these oligopeptides, peptides, or fragments are identical to a portion of the amino acid sequence of the natural protein and contain the entire amino acid sequence of a small, naturally occurring molecule. Short stretches of HSPP amino acids may be fused with those of another protein, such as KLH, and antibodies to the chimeric molecule may be produced.

40 Monoclonal antibodies to HSPP may be prepared using any technique which provides for the production of antibody molecules by continuous cell lines in culture. These include, but are not limited to, the hybridoma technique, the human B-cell hybridoma technique, and the EBV-hybridoma technique. (See, e.g., Kohler, G. et al. (1975) Nature 256:495-497; Kozhor, D. et al. (1985) J. Immunol. Methods 81:31-42;

5 Cote, R.J. et al. (1983) Proc. Natl. Acad. Sci. 80:2026-2030; and Cole, S.P. et al. (1984) Mol. Cell Biol. 62:109-120.)

In addition, techniques developed for the production of "chimeric antibodies," such as the splicing of mouse antibody genes to human antibody genes to obtain a molecule  
10 with appropriate antigen specificity and biological activity, can be used. (See, e.g., Morrison, S.L. et al. (1984) Proc. Natl. Acad. Sci. 81:6851-6855; Neuberger, M.S. et al. (1984) Nature 312:604-608; and Takeda, S. et al. (1985) Nature 314:452-454.)

15 Alternatively, techniques described for the production of single chain antibodies may be adapted, using methods known in the art, to produce HSPP-specific single chain  
20 antibodies. Antibodies with related specificity, but of distinct idiotype composition, may be generated by chain shuffling from random combinatorial immunoglobulin libraries. (See, e.g., Burton D.R. (1991) Proc. Natl. Acad. Sci. 88:10134-10137.)

Antibodies may also be produced by inducing in vivo production in the lymphocyte population or by screening immunoglobulin libraries or panels of highly  
25 specific binding reagents as disclosed in the literature. (See, e.g., Orlandi, R. et al. (1989) Proc. Natl. Acad. Sci. 86: 3833-3837; Winter, G. et al. (1991) Nature 349:293-299.)

Antibody fragments which contain specific binding sites for HSPP may also be generated. For example, such fragments include, but are not limited to, F(ab')<sub>2</sub> fragments  
30 produced by pepsin digestion of the antibody molecule and Fab fragments generated by reducing the disulfide bridges of the F(ab')<sub>2</sub> fragments. Alternatively, Fab expression libraries may be constructed to allow rapid and easy identification of monoclonal Fab  
35 fragments with the desired specificity. (See, e.g., Huse, W.D. et al. (1989) Science 246:1275-1281.)

Various immunoassays may be used for screening to identify antibodies having the  
40 desired specificity. Numerous protocols for competitive binding or immunoradiometric assays using either polyclonal or monoclonal antibodies with established specificities are well known in the art. Such immunoassays typically involve the measurement of complex  
45 formation between HSPP and its specific antibody. A two-site, monoclonal-based immunoassay utilizing monoclonal antibodies reactive to two non-interfering HSPP  
50 epitopes is preferred, but a competitive binding assay may also be employed (Pound, supra).

5 Various methods such as Scatchard analysis in conjunction with  
radioimmunoassay techniques may be used to assess the affinity of antibodies for HSPP.  
Affinity is expressed as an association constant,  $K_a$ , which is defined as the molar  
concentration of HSPP-antibody complex divided by the molar concentrations of free  
10 antigen and free antibody under equilibrium conditions. The  $K_a$  determined for a  
preparation of polyclonal antibodies, which are heterogeneous in their affinities for  
multiple HSPP epitopes, represents the average affinity, or avidity, of the antibodies for  
HSPP. The  $K_a$  determined for a preparation of monoclonal antibodies, which are  
15 monospecific for a particular HSPP epitope, represents a true measure of affinity. High-  
affinity antibody preparations with  $K_a$  ranging from about  $10^9$  to  $10^{12}$  L/mole are preferred  
for use in immunoassays in which the HSPP-antibody complex must withstand rigorous  
manipulations. Low-affinity antibody preparations with  $K_a$  ranging from about  $10^6$  to  $10^7$   
20 L/mole are preferred for use in immunopurification and similar procedures which  
ultimately require dissociation of HSPP, preferably in active form, from the antibody  
(Catty, D. (1988) Antibodies, Volume I: A Practical Approach, IRL Press, Washington,  
DC; Liddell, J. E. and Cryer, A. (1991) A Practical Guide to Monoclonal Antibodies, John  
25 Wiley & Sons, New York NY).

The titer and avidity of polyclonal antibody preparations may be further evaluated  
30 to determine the quality and suitability of such preparations for certain downstream  
applications. For example, a polyclonal antibody preparation containing at least 1-2 mg  
specific antibody/ml, preferably 5-10 mg specific antibody/ml, is preferred for use in  
procedures requiring precipitation of HSPP-antibody complexes. Procedures for  
35 evaluating antibody specificity, titer, and avidity, and guidelines for antibody quality and  
usage in various applications, are generally available. (See, e.g., Catty, supra, and Coligan  
et al. supra.)  
25

40 In another embodiment of the invention, the polynucleotides encoding HSPP, or  
any fragment or complement thereof, may be used for therapeutic purposes. In one aspect,  
the complement of the polynucleotide encoding HSPP may be used in situations in which  
it would be desirable to block the transcription of the mRNA. In particular, cells may be  
45 transformed with sequences complementary to polynucleotides encoding HSPP. Thus,  
complementary molecules or fragments may be used to modulate HSPP activity, or to  
achieve regulation of gene function. Such technology is now well known in the art, and  
50

5 sense or antisense oligonucleotides or larger fragments can be designed from various locations along the coding or control regions of sequences encoding HSPP.

Expression vectors derived from retroviruses, adenoviruses, or herpes or vaccinia viruses, or from various bacterial plasmids, may be used for delivery of nucleotide  
10 sequences to the targeted organ, tissue, or cell population. Methods which are well known to those skilled in the art can be used to construct vectors to express nucleic acid sequences complementary to the polynucleotides encoding HSPP. (See, e.g., Sambrook, supra; Ausubel, 1995, supra.)

15 Genes encoding HSPP can be turned off by transforming a cell or tissue with expression vectors which express high levels of a polynucleotide, or fragment thereof, encoding HSPP. Such constructs may be used to introduce untranslatable sense or antisense sequences into a cell. Even in the absence of integration into the DNA, such vectors may continue to transcribe RNA molecules until they are disabled by endogenous nucleases. Transient expression may last for a month or more with a non-replicating  
20 vector, and may last even longer if appropriate replication elements are part of the vector system.

As mentioned above, modifications of gene expression can be obtained by designing complementary sequences or antisense molecules (DNA, RNA, or PNA) to the  
30 control, 5', or regulatory regions of the gene encoding HSPP. Oligonucleotides derived from the transcription initiation site, e.g., between about positions -10 and +10 from the start site, are preferred. Similarly, inhibition can be achieved using triple helix base-pairing methodology. Triple helix pairing is useful because it causes inhibition of the ability of the double helix to open sufficiently for the binding of polymerases, transcription factors, or regulatory molecules. Recent therapeutic advances using triplex  
35 DNA have been described in the literature. (See, e.g., Gee, J.E. et al. (1994) in Huber, B.E. and B.I. Carr, Molecular and Immunologic Approaches, Futura Publishing, Mt. Kisco NY, pp. 163-177.) A complementary sequence or antisense molecule may also be designed to block translation of mRNA by preventing the transcript from binding to  
40 ribosomes.

45 Ribozyes, enzymatic RNA molecules, may also be used to catalyze the specific cleavage of RNA. The mechanism of ribozyme action involves sequence-specific hybridization of the ribozyme molecule to complementary target RNA, followed by  
50

5 endonucleolytic cleavage. For example, engineered hammerhead motif ribozyme molecules may specifically and efficiently catalyze endonucleolytic cleavage of sequences encoding HSPP.

10 Specific ribozyme cleavage sites within any potential RNA target are initially identified by scanning the target molecule for ribozyme cleavage sites, including the following sequences: GUA, GUU, and GUC. Once identified, short RNA sequences of between 15 and 20 ribonucleotides, corresponding to the region of the target gene containing the cleavage site, may be evaluated for secondary structural features which may render the oligonucleotide inoperable. The suitability of candidate targets may also be 15 evaluated by testing accessibility to hybridization with complementary oligonucleotides using ribonuclease protection assays.

20 Complementary ribonucleic acid molecules and ribozymes of the invention may be prepared by any method known in the art for the synthesis of nucleic acid molecules. These include techniques for chemically synthesizing oligonucleotides such as solid phase 25 phosphoramidite chemical synthesis. Alternatively, RNA molecules may be generated by in vitro and in vivo transcription of DNA sequences encoding HSPP. Such DNA sequences may be incorporated into a wide variety of vectors with suitable RNA polymerase promoters such as T7 or SP6. Alternatively, these cDNA constructs that synthesize complementary RNA, constitutively or inducibly, can be introduced into cell 30 lines, cells, or tissues.

35 RNA molecules may be modified to increase intracellular stability and half-life. Possible modifications include, but are not limited to, the addition of flanking sequences at the 5' and/or 3' ends of the molecule, or the use of phosphorothioate or 2' O-methyl rather than phosphodiesterase linkages within the backbone of the molecule. This concept is 40 inherent in the production of PNAs and can be extended in all of these molecules by the inclusion of nontraditional bases such as inosine, queosine, and wybutosine, as well as acetyl-, methyl-, thio-, and similarly modified forms of adenine, cytidine, guanine, thymine, and uridine which are not as easily recognized by endogenous endonucleases.

45 Many methods for introducing vectors into cells or tissues are available and 30 equally suitable for use in vivo, in vitro, and ex vivo. For ex vivo therapy, vectors may be introduced into stem cells taken from the patient and clonally propagated for autologous transplant back into that same patient. Delivery by transfection, by liposome injections, or 50



5 by polycationic amino polymers may be achieved using methods which are well known in the art. (See, e.g., Goldman, C.K. et al. (1997) Nature Biotechnology 15:462-466.)

10 Any of the therapeutic methods described above may be applied to any subject in need of such therapy, including, for example, mammals such as dogs, cats, cows, horses, rabbits, monkeys, and most preferably, humans.

15 An additional embodiment of the invention relates to the administration of a pharmaceutical or sterile composition, in conjunction with a pharmaceutically acceptable carrier, for any of the therapeutic effects discussed above. Such pharmaceutical compositions may consist of HSPP, antibodies to HSPP, and mimetics, agonists, antagonists, or inhibitors of HSPP. The compositions may be administered alone or in combination with at least one other agent, such as a stabilizing compound, which may be administered in any sterile, biocompatible pharmaceutical carrier including, but not limited to, saline, buffered saline, dextrose, and water. The compositions may be administered to a patient alone, or in combination with other agents, drugs, or hormones.

20 The pharmaceutical compositions utilized in this invention may be administered by any number of routes including, but not limited to, oral, intravenous, intramuscular, intra-arterial, intramedullary, intrathecal, intraventricular, transdermal, subcutaneous, intraperitoneal, intranasal, enteral, topical, sublingual, or rectal means.

25 In addition to the active ingredients, these pharmaceutical compositions may contain suitable pharmaceutically-acceptable carriers comprising excipients and auxiliaries which facilitate processing of the active compounds into preparations which can be used pharmaceutically. Further details on techniques for formulation and administration may be found in the latest edition of Remington's Pharmaceutical Sciences (Maack Publishing, Easton PA).

30 Pharmaceutical compositions for oral administration can be formulated using pharmaceutically acceptable carriers well known in the art in dosages suitable for oral administration. Such carriers enable the pharmaceutical compositions to be formulated as tablets, pills, dragees, capsules, liquids, gels, syrups, slurries, suspensions, and the like, for ingestion by the patient.

35 Pharmaceutical preparations for oral use can be obtained through combining active compounds with solid excipient and processing the resultant mixture of granules (optionally, after grinding) to obtain tablets or dragee cores. Suitable auxiliaries can be

5 added, if desired. Suitable excipients include carbohydrate or protein fillers, such as  
sugars, including lactose, sucrose, mannitol, and sorbitol; starch from corn, wheat, rice,  
potato, or other plants; cellulose, such as methyl cellulose,  
10 hydroxypropylmethyl-cellulose, or sodium carboxymethylcellulose; gums, including  
5 arabic and tragacanth; and proteins, such as gelatin and collagen. If desired, disintegrating  
or solubilizing agents may be added, such as the cross-linked polyvinyl pyrrolidone, agar,  
and alginic acid or a salt thereof, such as sodium alginate.

15 Dragee cores may be used in conjunction with suitable coatings, such as  
concentrated sugar solutions, which may also contain gum arabic, talc,  
20 polyvinylpyrrolidone, carbopol gel, polyethylene glycol, and/or titanium dioxide, lacquer  
solutions, and suitable organic solvents or solvent mixtures. Dyestuffs or pigments may  
be added to the tablets or dragee coatings for product identification or to characterize the  
quantity of active compound, i.e., dosage.

Pharmaceutical preparations which can be used orally include push-fit capsules  
25 15 made of gelatin, as well as soft, sealed capsules made of gelatin and a coating, such as  
glycerol or sorbitol. Push-fit capsules can contain active ingredients mixed with fillers or  
binders, such as lactose or starches, lubricants, such as talc or magnesium stearate, and,  
optionally, stabilizers. In soft capsules, the active compounds may be dissolved or  
30 suspended in suitable liquids, such as fatty oils, liquid, or liquid polyethylene glycol with  
20 or without stabilizers.

Pharmaceutical formulations suitable for parenteral administration may be  
35 formulated in aqueous solutions, preferably in physiologically compatible buffers such as  
Hanks' solution, Ringer's solution, or physiologically buffered saline. Aqueous injection  
suspensions may contain substances which increase the viscosity of the suspension, such  
40 25 as sodium carboxymethyl cellulose, sorbitol, or dextran. Additionally, suspensions of the  
active compounds may be prepared as appropriate oily injection suspensions. Suitable  
lipophilic solvents or vehicles include fatty oils, such as sesame oil, or synthetic fatty acid  
esters, such as ethyl oleate, triglycerides, or liposomes. Non-lipid polycationic amino  
45 polymers may also be used for delivery. Optionally, the suspension may also contain  
30 suitable stabilizers or agents to increase the solubility of the compounds and allow for the  
preparation of highly concentrated solutions.

5 For topical or nasal administration, penetrants appropriate to the particular barrier to be permeated are used in the formulation. Such penetrants are generally known in the art.

10 The pharmaceutical compositions of the present invention may be manufactured in a manner that is known in the art, e.g., by means of conventional mixing, dissolving, granulating, dragee-making, levigating, emulsifying, encapsulating, entrapping, or lyophilizing processes.

15 The pharmaceutical composition may be provided as a salt and can be formed with many acids, including but not limited to, hydrochloric, sulfuric, acetic, lactic, tartaric, malic, and succinic acid. Salts tend to be more soluble in aqueous or other protonic solvents than are the corresponding free base forms. In other cases, the preferred preparation may be a lyophilized powder which may contain any or all of the following: 1 mM to 50 mM histidine, 0.1% to 2% sucrose, and 2% to 7% mannitol, at a pH range of 4.5 to 5.5, that is combined with buffer prior to use.

20 After pharmaceutical compositions have been prepared, they can be placed in an appropriate container and labeled for treatment of an indicated condition. For administration of HSPP, such labeling would include amount, frequency, and method of administration.

25 Pharmaceutical compositions suitable for use in the invention include compositions wherein the active ingredients are contained in an effective amount to achieve the intended purpose. The determination of an effective dose is well within the capability of those skilled in the art.

30 For any compound, the therapeutically effective dose can be estimated initially either in cell culture assays, e.g., of neoplastic cells or in animal models such as mice, rats, rabbits, dogs, or pigs. An animal model may also be used to determine the appropriate concentration range and route of administration. Such information can then be used to determine useful doses and routes for administration in humans.

35 A therapeutically effective dose refers to that amount of active ingredient, for example HSPP or fragments thereof, antibodies of HSPP, and agonists, antagonists or inhibitors of HSPP, which ameliorates the symptoms or condition. Therapeutic efficacy and toxicity may be determined by standard pharmaceutical procedures in cell cultures or with experimental animals, such as by calculating the ED<sub>50</sub> (the dose therapeutically

5 effective in 50% of the population) or LD<sub>50</sub> (the dose lethal to 50% of the population)  
statistics. The dose ratio of toxic to therapeutic effects is the therapeutic index, and it can  
be expressed as the LD<sub>50</sub>/ED<sub>50</sub> ratio. Pharmaceutical compositions which exhibit large  
10 therapeutic indices are preferred. The data obtained from cell culture assays and animal  
5 studies are used to formulate a range of dosage for human use. The dosage contained in  
such compositions is preferably within a range of circulating concentrations that includes  
the ED<sub>50</sub> with little or no toxicity. The dosage varies within this range depending upon the  
15 dosage form employed, the sensitivity of the patient, and the route of administration.

The exact dosage will be determined by the practitioner, in light of factors related  
10 to the subject requiring treatment. Dosage and administration are adjusted to provide  
sufficient levels of the active moiety or to maintain the desired effect. Factors which may  
20 be taken into account include the severity of the disease state, the general health of the  
subject, the age, weight, and gender of the subject, time and frequency of administration,  
drug combination(s), reaction sensitivities, and response to therapy. Long-acting  
25 15 pharmaceutical compositions may be administered every 3 to 4 days, every week, or  
biweekly depending on the half-life and clearance rate of the particular formulation.

Normal dosage amounts may vary from about 0.1 µg to 100,000 µg, up to a total  
30 dose of about 1 gram, depending upon the route of administration. Guidance as to  
particular dosages and methods of delivery is provided in the literature and generally  
20 available to practitioners in the art. Those skilled in the art will employ different  
formulations for nucleotides than for proteins or their inhibitors. Similarly, delivery of  
35 polynucleotides or polypeptides will be specific to particular cells, conditions, locations,  
etc.

## 25 DIAGNOSTICS

40 In another embodiment, antibodies which specifically bind HSPP may be used for  
the diagnosis of disorders characterized by expression of HSPP, or in assays to monitor  
patients being treated with HSPP or agonists, antagonists, or inhibitors of HSPP.

45 Antibodies useful for diagnostic purposes may be prepared in the same manner as  
30 described above for therapeutics. Diagnostic assays for HSPP include methods which  
utilize the antibody and a label to detect HSPP in human body fluids or in extracts of cells  
or tissues. The antibodies may be used with or without modification, and may be labeled  
50

5 by covalent or non-covalent attachment of a reporter molecule. A wide variety of reporter molecules, several of which are described above, are known in the art and may be used.

10 A variety of protocols for measuring HSPP, including ELISAs, RIAs, and FACS, are known in the art and provide a basis for diagnosing altered or abnormal levels of HSPP  
5 expression. Normal or standard values for HSPP expression are established by combining body fluids or cell extracts taken from normal mammalian subjects, preferably human, with antibody to HSPP under conditions suitable for complex formation. The amount of  
15 standard complex formation may be quantitated by various methods, preferably by photometric means. Quantities of HSPP expressed in subject, control, and disease samples  
10 from biopsied tissues are compared with the standard values. Deviation between standard and subject values establishes the parameters for diagnosing disease.

20 In another embodiment of the invention, the polynucleotides encoding HSPP may be used for diagnostic purposes. The polynucleotides which may be used include oligonucleotide sequences, complementary RNA and DNA molecules, and PNAs. The  
25 polynucleotides may be used to detect and quantitate gene expression in biopsied tissues in which expression of HSPP may be correlated with disease. The diagnostic assay may be used to determine absence, presence, and excess expression of HSPP, and to monitor regulation of HSPP levels during therapeutic intervention.

30 In one aspect, hybridization with PCR probes which are capable of detecting polynucleotide sequences, including genomic sequences, encoding HSPP or closely  
20 related molecules may be used to identify nucleic acid sequences which encode HSPP. The specificity of the probe, whether it is made from a highly specific region, e.g., the 5'  
35 regulatory region, or from a less specific region, e.g., a conserved motif, and the stringency of the hybridization or amplification (maximal, high, intermediate, or low), will  
25 determine whether the probe identifies only naturally occurring sequences encoding  
40 HSPP, allelic variants, or related sequences.

45 Probes may also be used for the detection of related sequences, and should preferably have at least 50% sequence identity to any of the HSPP encoding sequences. The hybridization probes of the subject invention may be DNA or RNA and may be  
30 derived from the sequence of SEQ ID NO:135-268 or from genomic sequences including promoters, enhancers, and introns of the HSPP gene.

Means for producing specific hybridization probes for DNAs encoding HSPP include the cloning of polynucleotide sequences encoding HSPP or HSPP derivatives into vectors for the production of mRNA probes. Such vectors are known in the art, are commercially available, and may be used to synthesize RNA probes *in vitro* by means of the addition of the appropriate RNA polymerases and the appropriate labeled nucleotides. Hybridization probes may be labeled by a variety of reporter groups, for example, by radionuclides such as  $^{32}\text{P}$  or  $^{35}\text{S}$ , or by enzymatic labels, such as alkaline phosphatase coupled to the probe via avidin/biotin coupling systems, and the like.

Polynucleotide sequences encoding HSPP may be used for the diagnosis of disorders associated with expression of HSPP. Examples of such disorders include, but are not limited to, cell proliferative disorders such as actinic keratosis, arteriosclerosis, atherosclerosis, bursitis, cirrhosis, hepatitis, mixed connective tissue disease (MCTD), myelofibrosis, paroxysmal nocturnal hemoglobinuria, polycythemia vera, psoriasis, primary thrombocythemia, and cancers including adenocarcinoma, leukemia, lymphoma, melanoma, myeloma, sarcoma, teratocarcinoma, and, in particular, cancers of the adrenal gland, bladder, bone, bone marrow, brain, breast, cervix, gall bladder, ganglia, gastrointestinal tract, heart, kidney, liver, lung, muscle, ovary, pancreas, parathyroid, penis, prostate, salivary glands, skin, spleen, testis, thymus, thyroid, and uterus; inflammatory disorders, such as acquired immunodeficiency syndrome (AIDS), Addison's disease, adult respiratory distress syndrome, allergies, ankylosing spondylitis, amyloidosis, anemia, asthma, atherosclerosis, autoimmune hemolytic anemia, autoimmune thyroiditis, autoimmune polyendocrinopathy-candidiasis-ectodermal dystrophy (APECED), bronchitis, cholecystitis, contact dermatitis, Crohn's disease, atopic dermatitis, dermatomyositis, diabetes mellitus, emphysema, episodic lymphopenia with lymphocytotoxins, erythroblastosis fetalis, erythema nodosum, atrophic gastritis, glomerulonephritis, Goodpasture's syndrome, gout, Graves' disease, Hashimoto's thyroiditis, hypereosinophilia, irritable bowel syndrome, multiple sclerosis, myasthenia gravis, myocardial or pericardial inflammation, osteoarthritis, osteoporosis, pancreatitis, polymyositis, psoriasis, Reiter's syndrome, rheumatoid arthritis, scleroderma, Sjögren's syndrome, systemic anaphylaxis, systemic lupus erythematosus, systemic sclerosis, thrombocytopenic purpura, ulcerative colitis, uveitis, Werner syndrome, complications of cancer, hemodialysis, and extracorporeal circulation, viral, bacterial, fungal, parasitic,

5 protozoal, and helminthic infections, and trauma; cardiovascular disorders including  
disorders of the blood vessels such as arteriovenous fistula, atherosclerosis, hypertension,  
vasculitis, Raynaud's disease, aneurysms, arterial dissections, varicose veins,  
10 thrombophlebitis and phlebothrombosis, and vascular tumors; disorders of the heart such  
5 as congestive heart failure, ischemic heart disease, angina pectoris, myocardial infarction,  
hypertensive heart disease, degenerative valvular heart disease, calcific aortic valve  
stenosis, congenitally bicuspid aortic valve, mitral annular calcification, mitral valve  
15 prolapse, rheumatic fever and rheumatic heart disease, infective endocarditis, nonbacterial  
thrombotic endocarditis, endocarditis of systemic lupus erythematosus, carcinoid heart  
10 disease, cardiomyopathy, myocarditis, pericarditis, neoplastic heart disease, and congenital  
heart disease; and disorders of the lungs such as congenital lung anomalies, atelectasis,  
20 pulmonary congestion and edema, pulmonary embolism, pulmonary hemorrhage,  
pulmonary infarction, pulmonary hypertension, vascular sclerosis, obstructive pulmonary  
disease, restrictive pulmonary disease, chronic obstructive pulmonary disease,  
25 emphysema, chronic bronchitis, bronchial asthma, bronchiectasis, bacterial pneumonia,  
viral and mycoplasmal pneumonia, lung abscess, pulmonary tuberculosis, diffuse  
interstitial diseases, pneumoconioses, sarcoidosis, idiopathic pulmonary fibrosis,  
desquamative interstitial pneumonitis, hypersensitivity pneumonitis, pulmonary  
30 eosinophilia bronchiolitis obliterans-organizing pneumonia, diffuse pulmonary  
20 hemorrhage syndromes, Goodpasture's syndromes, idiopathic pulmonary hemosiderosis,  
pulmonary involvement in collagen-vascular disorders, pulmonary alveolar proteinosis,  
lung tumors, inflammatory and noninflammatory pleural effusions, pneumothorax, and  
35 pleural tumors; neurological disorders such as epilepsy, ischemic cerebrovascular disease,  
stroke, cerebral neoplasms, Alzheimer's disease, Pick's disease, Huntington's disease,  
25 dementia, Parkinson's disease and other extrapyramidal disorders, amyotrophic lateral  
40 sclerosis and other motor neuron disorders, progressive neural muscular atrophy, retinitis  
pigmentosa, hereditary ataxias, multiple sclerosis and other demyelinating diseases,  
bacterial and viral meningitis, brain abscess, subdural empyema, epidural abscess,  
45 suppurative intracranial thrombophlebitis, myelitis and radiculitis, viral central nervous  
30 system disease; prion diseases including kuru, Creutzfeldt-Jakob disease, and Gerstmann-  
Straussler-Scheinker syndrome; fatal familial insomnia, nutritional and metabolic diseases  
of the nervous system, neurofibromatosis, tuberous sclerosis, cerebelloretinal

5 hemangioblastomatosis, encephalotrigeminal syndrome, mental retardation and other  
developmental disorders of the central nervous system, cerebral palsy, neuroskeletal  
disorders, autonomic nervous system disorders, cranial nerve disorders, spinal cord  
10 diseases, muscular dystrophy and other neuromuscular disorders, peripheral nervous  
5 system disorders, dermatomyositis and polymyositis; inherited, metabolic, endocrine, and  
toxic myopathies; myasthenia gravis, periodic paralysis; mental disorders including mood,  
anxiety, and schizophrenic disorders; akathisia, amnesia, catatonia, diabetic neuropathy,  
15 tardive dyskinesia, dystonias, paranoid psychoses, postherpetic neuralgia, and Tourette's  
disorder; reproductive disorders such as disorders of prolactin production; infertility,  
10 including tubal disease, ovulatory defects, and endometriosis; disruptions of the estrous  
cycle, disruptions of the menstrual cycle, polycystic ovary syndrome, ovarian  
20 hyperstimulation syndrome, endometrial and ovarian tumors, uterine fibroids, autoimmune  
disorders, ectopic pregnancies, and teratogenesis; cancer of the breast, fibrocystic breast  
disease, and galactorrhea; disruptions of spermatogenesis, abnormal sperm physiology,  
25 cancer of the testis, cancer of the prostate, benign prostatic hyperplasia, prostatitis,  
Peyronie's disease, carcinoma of the male breast, and gynecomastia; and developmental  
disorders, such as renal tubular acidosis, anemia, Cushing's syndrome, achondroplastic  
dwarfism, Duchenne and Becker muscular dystrophy, epilepsy, gonadal dysgenesis,  
30 WAGR syndrome (Wilms' tumor, aniridia, genitourinary abnormalities, and mental  
20 retardation), Smith-Magenis syndrome, myelodysplastic syndrome, hereditary  
mucoepithelial dysplasia, hereditary keratodermas, hereditary neuropathies such as  
Charcot-Marie-Tooth disease and neurofibromatosis, hypothyroidism, hydrocephalus,  
35 seizure disorders such as Sydenham's chorea and cerebral palsy, spina bifida,  
anencephaly, craniorachischisis, congenital glaucoma, cataract, and sensorineural hearing  
25 loss. The polynucleotide sequences encoding HSPP may be used in Southern or northern  
analysis, dot blot, or other membrane-based technologies; in PCR technologies; in  
40 dipstick, pin, and multiformat ELISA-like assays; and in microarrays utilizing fluids or  
tissues from patients to detect altered HSPP expression. Such qualitative or quantitative  
45 methods are well known in the art.

30 In a particular aspect, the nucleotide sequences encoding HSPP may be useful in  
assays that detect the presence of associated disorders, particularly those mentioned above.  
The nucleotide sequences encoding HSPP may be labeled by standard methods and added



5 to a fluid or tissue sample from a patient under conditions suitable for the formation of  
hybridization complexes. After a suitable incubation period, the sample is washed and the  
signal is quantitated and compared with a standard value. If the amount of signal in the  
10 patient sample is significantly altered in comparison to a control sample then the presence  
5 of altered levels of nucleotide sequences encoding HSPP in the sample indicates the  
presence of the associated disorder. Such assays may also be used to evaluate the efficacy  
of a particular therapeutic treatment regimen in animal studies, in clinical trials, or to  
15 monitor the treatment of an individual patient.

In order to provide a basis for the diagnosis of a disorder associated with  
10 expression of HSPP, a normal or standard profile for expression is established. This may  
be accomplished by combining body fluids or cell extracts taken from normal subjects,  
20 either animal or human, with a sequence, or a fragment thereof, encoding HSPP, under  
conditions suitable for hybridization or amplification. Standard hybridization may be  
quantified by comparing the values obtained from normal subjects with values from an  
25 experiment in which a known amount of a substantially purified polynucleotide is used.  
Standard values obtained in this manner may be compared with values obtained from  
samples from patients who are symptomatic for a disorder. Deviation from standard  
values is used to establish the presence of a disorder.

30 Once the presence of a disorder is established and a treatment protocol is initiated,  
20 hybridization assays may be repeated on a regular basis to determine if the level of  
expression in the patient begins to approximate that which is observed in the normal  
subject. The results obtained from successive assays may be used to show the efficacy of  
35 treatment over a period ranging from several days to months.

With respect to cancer, the presence of an abnormal amount of transcript (either  
25 under- or overexpressed) in biopsied tissue from an individual may indicate a  
40 predisposition for the development of the disease, or may provide a means for detecting  
the disease prior to the appearance of actual clinical symptoms. A more definitive  
diagnosis of this type may allow health professionals to employ preventative measures or  
45 aggressive treatment earlier thereby preventing the development or further progression of  
30 the cancer.

Additional diagnostic uses for oligonucleotides designed from the sequences  
50 encoding HSPP may involve the use of PCR. These oligomers may be chemically

5 synthesized, generated enzymatically, or produced in vitro. Oligomers will preferably contain a fragment of a polynucleotide encoding HSPP, or a fragment of a polynucleotide complementary to the polynucleotide encoding HSPP, and will be employed under  
10 optimized conditions for identification of a specific gene or condition. Oligomers may also be employed under less stringent conditions for detection or quantitation of closely related DNA or RNA sequences.

Methods which may also be used to quantitate the expression of HSPP include  
15 radiolabeling or biotinylating nucleotides, coamplification of a control nucleic acid, and interpolating results from standard curves. (See, e.g., Melby, P.C. et al. (1993) J.

10 Immunol. Methods 159:235-244; Duplaa, C. et al. (1993) Anal. Biochem. 212:229-236.)

The speed of quantitation of multiple samples may be accelerated by running the assay in  
20 an ELISA format where the oligomer of interest is presented in various dilutions and a spectrophotometric or colorimetric response gives rapid quantitation.

In further embodiments, oligonucleotides or longer fragments derived from any of  
25 the polynucleotide sequences described herein may be used as targets in a microarray. The microarray can be used to monitor the expression level of large numbers of genes simultaneously and to identify genetic variants, mutations, and polymorphisms. This information may be used to determine gene function, to understand the genetic basis of a  
30 disorder, to diagnose a disorder, and to develop and monitor the activities of therapeutic agents.

Microarrays may be prepared, used, and analyzed using methods known in the art.  
35 (See, e.g., Brennan, T.M. et al. (1995) U.S. Patent No. 5,474,796; Schena, M. et al. (1996) Proc. Natl. Acad. Sci. 93:10614-10619; Baldeschweiler et al. (1995) PCT application WO95/251116; Shalon, D. et al. (1995) PCT application WO95/35505; Heller, R.A. et al.  
40 (1997) Proc. Natl. Acad. Sci. 94:2150-2155; and Heller, M.J. et al. (1997) U.S. Patent No. 5,605,662.)

In another embodiment of the invention, nucleic acid sequences encoding HSPP may be used to generate hybridization probes useful in mapping the naturally occurring  
45 genomic sequence. The sequences may be mapped to a particular chromosome, to a specific region of a chromosome, or to artificial chromosome constructions, e.g., human artificial chromosomes (HACs), yeast artificial chromosomes (YACs), bacterial artificial chromosomes (BACs), bacterial P1 constructions, or single chromosome cDNA libraries.  
50

(See, e.g., Harrington, J.J. et al. (1997) Nat Genet. 15:345-355; Price, C.M. (1993) Blood Rev. 7:127-134; and Trask, B.J. (1991) Trends Genet. 7:149-154.)

Fluorescent in situ hybridization (FISH) may be correlated with other physical chromosome mapping techniques and genetic map data. (See, e.g., Heinz-Ulrich, et al. (1995) in Meyers, supra, pp. 965-968.) Examples of genetic map data can be found in various scientific journals or at the Online Mendelian Inheritance in Man (OMIM) site. Correlation between the location of the gene encoding HSPP on a physical chromosomal map and a specific disorder, or a predisposition to a specific disorder, may help define the region of DNA associated with that disorder. The nucleotide sequences of the invention may be used to detect differences in gene sequences among normal, carrier, and affected individuals.

In situ hybridization of chromosomal preparations and physical mapping techniques, such as linkage analysis using established chromosomal markers, may be used for extending genetic maps. Often the placement of a gene on the chromosome of another mammalian species, such as mouse, may reveal associated markers even if the number or arm of a particular human chromosome is not known. New sequences can be assigned to chromosomal arms by physical mapping. This provides valuable information to investigators searching for disease genes using positional cloning or other gene discovery techniques. Once the disease or syndrome has been crudely localized by genetic linkage to a particular genomic region, e.g., ataxia-telangiectasia to 11q22-23, any sequences mapping to that area may represent associated or regulatory genes for further investigation. (See, e.g., Gatti, R.A. et al. (1988) Nature 336:577-580.) The nucleotide sequence of the subject invention may also be used to detect differences in the chromosomal location due to translocation, inversion, etc., among normal, carrier, or affected individuals.

In another embodiment of the invention, HSPP, its catalytic or immunogenic fragments, or oligopeptides thereof can be used for screening libraries of compounds in any of a variety of drug screening techniques. The fragment employed in such screening may be free in solution, affixed to a solid support, borne on a cell surface, or located intracellularly. The formation of binding complexes between HSPP and the agent being tested may be measured.

Another technique for drug screening provides for high throughput screening of compounds having suitable binding affinity to the protein of interest. (See, e.g., Geysen,

et al. (1984) PCT application WO84/03564.) In this method, large numbers of different small test compounds are synthesized on a solid substrate. The test compounds are reacted with HSPP, or fragments thereof, and washed. Bound HSPP is then detected by methods well known in the art. Purified HSPP can also be coated directly onto plates for use in the aforementioned drug screening techniques. Alternatively, non-neutralizing antibodies can be used to capture the peptide and immobilize it on a solid support.

In another embodiment, one may use competitive drug screening assays in which neutralizing antibodies capable of binding HSPP specifically compete with a test compound for binding HSPP. In this manner, antibodies can be used to detect the presence of any peptide which shares one or more antigenic determinants with HSPP.

In additional embodiments, the nucleotide sequences which encode HSPP may be used in any molecular biology techniques that have yet to be developed, provided the new techniques rely on properties of nucleotide sequences that are currently known, including, but not limited to, such properties as the triplet genetic code and specific base pair interactions.

Without further elaboration, it is believed that one skilled in the art can, using the preceding description, utilize the present invention to its fullest extent. The following preferred specific embodiments are, therefore, to be construed as merely illustrative, and not limitative of the remainder of the disclosure in any way whatsoever.

The disclosures of all applications, patents, and publications, mentioned above and below, in particular US Ser. No. 60/090,762, US Ser. No. 60/094,983, US Ser. No. 60/102,686, and US Ser. No. 60/112,129, are hereby expressly incorporated by reference.

## EXAMPLES

### I. Construction of cDNA Libraries

RNA was purchased from Clontech or isolated from tissues described in Table 4. Some tissues were homogenized and lysed in guanidinium isothiocyanate, while others were homogenized and lysed in phenol or in a suitable mixture of denaturants, such as TRIZOL (Life Technologies), a monophasic solution of phenol and guanidine isothiocyanate. The resulting lysates were centrifuged over CsCl cushions or extracted with chloroform. RNA was precipitated from the lysates with either isopropanol or sodium acetate and ethanol, or by other routine methods.

5 Phenol extraction and precipitation of RNA were repeated as necessary to increase RNA purity. In some cases, RNA was treated with DNase. For most libraries, poly(A+) RNA was isolated using oligo d(T)-coupled paramagnetic particles (Promega), OLIGOTEX latex particles (QIAGEN, Valencia CA), or an OLIGOTEX mRNA  
10 purification kit (QIAGEN). Alternatively, RNA was isolated directly from tissue lysates using other RNA isolation kits, e.g., the POLY(A)PURE mRNA purification kit (Ambion, Austin TX).

15 In some cases, Stratagene was provided with RNA and constructed the corresponding cDNA libraries. Otherwise, cDNA was synthesized and cDNA libraries were constructed with the UNIZAP vector system (Stratagene) or SUPERScript plasmid system (Life Technologies), using the recommended procedures or similar methods known  
20 in the art. (See, e.g., Ausubel, 1997, supra, units 5.1-6.6). Reverse transcription was initiated using oligo d(T) or random primers. Synthetic oligonucleotide adapters were ligated to double stranded cDNA, and the cDNA was digested with the appropriate  
25 restriction enzyme or enzymes. For most libraries, the cDNA was size-selected (300-1000 bp) using SEPHACRYL S1000, SEPHAROSE CL2B, or SEPHAROSE CL4B column chromatography (Amersham Pharmacia Biotech) or preparative agarose gel electrophoresis. cDNAs were ligated into compatible restriction enzyme sites of the  
30 polylinker of a suitable plasmid, e.g., PBLUESCRIPT plasmid (Stratagene), pSPORT1 plasmid (Life Technologies), or pINCY (Incyte Pharmaceuticals, Palo Alto CA). Recombinant plasmids were transformed into competent E. coli cells including XL1-Blue, XL1-BlueMRF, or SOLR from Stratagene or DH5 $\alpha$ , DH10B, or ElectroMAX DH10B  
35 from Life Technologies.

## II. Isolation of cDNA Clones

25 Plasmids were recovered from host cells by in vivo excision, using the UNIZAP vector system (Stratagene) or cell lysis. Plasmids were purified using at least one of the following: a MAGIC or WIZARD Minipreps DNA purification system (Promega); an AGTC Miniprep purification kit (Edge Biosystems, Gaithersburg MD); and QIAWELL 8 Plasmid, QIAWELL 8 Plus Plasmid, QIAWELL 8 Ultra Plasmid purification systems or  
45 the REAL Prep 96 plasmid kit from QIAGEN. Following precipitation, plasmids were resuspended in 0.1 ml of distilled water and stored, with or without lyophilization, at 4°C.  
50

Alternatively, plasmid DNA was amplified from host cell lysates using direct link PCR in a high-throughput format (Rao, V.B. (1994) Anal. Biochem. 216:1-14). Host cell lysis and thermal cycling steps were carried out in a single reaction mixture. Samples were processed and stored in 384-well plates, and the concentration of amplified plasmid DNA was quantified fluorometrically using PICOGREEN dye (Molecular Probes, Eugene OR) and a Fluoroskan II fluorescence scanner (Labsystems Oy, Helsinki, Finland).

### III. Sequencing and Analysis

The cDNAs were prepared for sequencing using the ABI CATALYST 800 (Perkin-Elmer) or the HYDRA microdispenser (Robbins Scientific) or MICROLAB 2200 (Hamilton) systems in combination with the PTC-200 thermal cyclers (MJ Research). The cDNAs were sequenced using the ABI PRISM 373 or 377 sequencing systems (Perkin-Elmer) and standard ABI protocols, base calling software, and kits. In one alternative, cDNAs were sequenced using the MEGABACE 1000 DNA sequencing system (Molecular Dynamics). In another alternative, the cDNAs were amplified and sequenced using the ABI PRISM BIGDYE Terminator cycle sequencing ready reaction kit (Perkin-Elmer). In yet another alternative, cDNAs were sequenced using solutions and dyes from Amersham Pharmacia Biotech. Reading frames for the ESTs were determined using standard methods (reviewed in Ausubel, 1997, supra, unit 7.7). Some of the cDNA sequences were selected for extension using the techniques disclosed in Example V.

The polynucleotide sequences derived from cDNA, extension, and shotgun sequencing were assembled and analyzed using a combination of software programs which utilize algorithms well known to those skilled in the art. Table 5 summarizes the software programs, descriptions, references, and threshold parameters used. The first column of Table 5 shows the tools, programs, and algorithms used, the second column provides a brief description thereof, the third column presents the references which are incorporated by reference herein, and the fourth column presents, where applicable, the scores, probability values, and other parameters used to evaluate the strength of a match between two sequences (the higher the probability the greater the homology). Sequences were analyzed using MACDNASIS PRO software (Hitachi Software Engineering, South San Francisco CA) and LASERGENE software (DNASTAR).

The polynucleotide sequences were validated by removing vector, linker, and polyA sequences and by masking ambiguous bases, using algorithms and programs based

on BLAST, dynamic programming, and dinucleotide nearest neighbor analysis. The sequences were then queried against a selection of public databases such as GenBank primate, rodent, mammalian, vertebrate, and eukaryote databases, and BLOCKS to acquire annotation, using programs based on BLAST, FASTA, and BLIMPS. The sequences were assembled into full length polynucleotide sequences using programs based on Phred, Phrap, and Consed, and were screened for open reading frames using programs based on GeneMark, BLAST, and FASTA. The full length polynucleotide sequences were translated to derive the corresponding full length amino acid sequences, and these full length sequences were subsequently analyzed by querying against databases such as the GenBank databases (described above), SwissProt, BLOCKS, PRINTS, Prosite, and Hidden Markov Model (HMM)-based protein family databases such as PFAM. HMM is a probabilistic approach which analyzes consensus primary structures of gene families. (See, e.g., Eddy, S.R. (1996) *Cur. Opin. Str. Biol.* 6:361-365.)

The programs described above for the assembly and analysis of full length polynucleotide and amino acid sequences were also used to identify polynucleotide sequence fragments from SEQ ID NO:135-268. Fragments from about 20 to about 4000 nucleotides which are useful in hybridization and amplification technologies were described in The Invention section above.

#### IV. Northern Analysis

Northern analysis is a laboratory technique used to detect the presence of a transcript of a gene and involves the hybridization of a labeled nucleotide sequence to a membrane on which RNAs from a particular cell type or tissue have been bound. (See, e.g., Sambrook, *supra*, ch. 7; Ausubel, 1995, *supra*, ch. 4 and 16.)

Analogous computer techniques applying BLAST were used to search for identical or related molecules in nucleotide databases such as GenBank or LIFESEQ database (Incyte Pharmaceuticals). This analysis is much faster than multiple membrane-based hybridizations. In addition, the sensitivity of the computer search can be modified to determine whether any particular match is categorized as exact or similar. The basis of the search is the product score, which is defined as:

$$\frac{\% \text{ sequence identity} \times \% \text{ maximum BLAST score}}{100}$$

5 The product score takes into account both the degree of similarity between two sequences  
and the length of the sequence match. For example, with a product score of 40, the match  
will be exact within a 1% to 2% error, and, with a product score of 70, the match will be  
exact. Similar molecules are usually identified by selecting those which show product  
10 5 scores between 15 and 40, although lower scores may identify related molecules.

The results of northern analyses are reported as a percentage distribution of  
libraries in which the transcript encoding HSPP occurred. Analysis involved the  
15 categorization of cDNA libraries by organ/tissue and disease. The organ/tissue categories  
included cardiovascular, dermatologic, developmental, endocrine, gastrointestinal,  
10 hematopoietic/immune, musculoskeletal, nervous, reproductive, and urologic. The  
disease/condition categories included cancer, inflammation/trauma, cell proliferation,  
20 neurological, and pooled. For each category, the number of libraries expressing the  
sequence of interest was counted and divided by the total number of libraries across all  
categories. Percentage values of tissue-specific and disease- or condition-specific  
25 15 expression are reported in Table 3.

#### V. Extension of HSPP Encoding Polynucleotides

Full length nucleic acid sequences of SEQ ID NOs:135-229 were produced by  
extension of the component fragments described in Table 1, column 5, using  
30 oligonucleotide primers based on these fragments. For each nucleic acid sequence, one  
20 primer was synthesized to initiate extension of an antisense polynucleotide, and the other  
was synthesized to initiate extension of a sense polynucleotide. Primers were used to  
facilitate the extension of the known sequence "outward" generating amplicons containing  
35 new unknown nucleotide sequence for the region of interest. The initial primers were  
designed from the cDNA using OLIGO™ 4.06 (National Biosciences, Plymouth, MN), or  
25 another appropriate program, to be about 22 to 30 nucleotides in length, to have a GC  
40 content of about 50% or more, and to anneal to the target sequence at temperatures of  
about 68°C to about 72°C. Any stretch of nucleotides which would result in hairpin  
structures and primer-primer dimerizations was avoided.

45 Selected human cDNA libraries (GIBCO BRL) were used to extend the sequence.  
30 If more than one extension is necessary or desired, additional sets of primers are designed  
to further extend the known region.



High fidelity amplification was obtained by following the instructions for the XL-PCR™ kit (The Perkin-Elmer Corp., Norwalk, CT) and thoroughly mixing the enzyme and reaction mix. PCR was performed using the PTC-200 thermal cycler (MJ Research, Inc., Watertown, MA), beginning with 40 pmol of each primer and the recommended concentrations of all other components of the kit, with the following parameters:

Step 1	94° C for 1 min (initial denaturation)
Step 2	65° C for 1 min
Step 3	68° C for 6 min
Step 4	94° C for 15 sec
Step 5	65° C for 1 min
Step 6	68° C for 7 min
Step 7	Repeat steps 4 through 6 for an additional 15 cycles
Step 8	94° C for 15 sec
Step 9	65° C for 1 min
Step 10	68° C for 7:15 min
Step 11	Repeat steps 8 through 10 for an additional 12 cycles
Step 12	72° C for 8 min
Step 13	4° C (and holding)

A 5  $\mu$ l to 10  $\mu$ l aliquot of the reaction mixture was analyzed by electrophoresis on a low concentration (about 0.6% to 0.8%) agarose mini-gel to determine which reactions were successful in extending the sequence. Bands thought to contain the largest products were excised from the gel, purified using QIAQUICK™ (QIAGEN Inc.), and trimmed of overhangs using Klenow enzyme to facilitate religation and cloning.

After ethanol precipitation, the products were redissolved in 13  $\mu$ l of ligation buffer, 1  $\mu$ l T4-DNA ligase (15 units) and 1  $\mu$ l T4 polynucleotide kinase were added, and the mixture was incubated at room temperature for 2 to 3 hours, or overnight at 16° C. Competent *E. coli* cells (in 40  $\mu$ l of appropriate media) were transformed with 3  $\mu$ l of ligation mixture and cultured in 80  $\mu$ l of SOC medium. (See, e.g., Sambrook, *supra*,

Appendix A, p. 2.) After incubation for one hour at 37° C, the *E. coli* mixture was plated on Luria Bertani (LB) agar (See, e.g., Sambrook, *supra*, Appendix A, p. 1) containing carbenicillin (2x carb). The following day, several colonies were randomly picked from each plate and cultured in 150  $\mu$ l of liquid LB/2x carb medium placed in an individual well of an appropriate commercially-available sterile 96-well microtiter plate. The

following day, 5  $\mu$ l of each overnight culture was transferred into a non-sterile 96-well plate and, after dilution 1:10 with water, 5  $\mu$ l from each sample was transferred into a PCR array.

For PCR amplification, 18  $\mu$ l of concentrated PCR reaction mix (3.3x) containing 4 units of rTth DNA polymerase, a vector primer, and one or both of the gene specific primers used for the extension reaction were added to each well. Amplification was performed using the following conditions:

5	Step 1	94° C for 60 sec
	Step 2	94° C for 20 sec
	Step 3	55° C for 30 sec
	Step 4	72° C for 90 sec
	Step 5	Repeat steps 2 through 4 for an additional 29 cycles
15	Step 6	72° C for 180 sec
	Step 7	4° C (and holding)

Aliquots of the PCR reactions were run on agarose gels together with molecular weight markers. The sizes of the PCR products were compared to the original partial cDNAs, and appropriate clones were selected, ligated into plasmid, and sequenced.

The full length nucleic acid sequences of SEQ ID NO:230-268 were produced by extension of an appropriate fragment of the full length molecule using oligonucleotide primers designed from this fragment. One primer was synthesized to initiate 5' extension of the known fragment, and the other primer, to initiate 3' extension of the known fragment. The initial primers were designed using OLIGO 4.06 software (National Biosciences), or another appropriate program, to be about 22 to 30 nucleotides in length, to have a GC content of about 50% or more, and to anneal to the target sequence at temperatures of about 68°C to about 72°C. Any stretch of nucleotides which would result in hairpin structures and primer-primer dimerizations was avoided.

Selected human cDNA libraries were used to extend the sequence. If more than one extension was necessary or desired, additional or nested sets of primers were designed.

High fidelity amplification was obtained by PCR using methods well known in the art. PCR was performed in 96-well plates using the PTC-200 thermal cycler (MJ Research, Inc.). The reaction mix contained DNA template, 200 nmol of each primer, reaction buffer containing  $Mg^{2+}$ ,  $(NH_4)_2SO_4$ , and  $\beta$ -mercaptoethanol, Taq DNA polymerase (Amersham Pharmacia Biotech), ELONGASE enzyme (Life Technologies), and Pfu DNA polymerase (Stratagene), with the following parameters for primer pair PCI A and PCI B: Step 1: 94°C, 3 min; Step 2: 94°C, 15 sec; Step 3: 60°C, 1 min; Step 4: 68°C, 2 min; Step 5: Steps 2, 3, and 4 repeated 20 times; Step 6: 68°C, 5 min; Step 7: storage at 4°C. In the alternative, the parameters for primer pair T7 and SK+ were as

5 follows: Step 1: 94°C, 3 min; Step 2: 94°C, 15 sec; Step 3: 57°C, 1 min; Step 4: 68°C, 2 min; Step 5: Steps 2, 3, and 4 repeated 20 times; Step 6: 68°C, 5 min; Step 7: storage at 4°C.

10 The concentration of DNA in each well was determined by dispensing 100 µl  
5 PICOGREEN quantitation reagent (0.25% (v/v) PICOGREEN; Molecular Probes, Eugene OR) dissolved in 1X TE and 0.5 µl of undiluted PCR product into each well of an opaque fluorimeter plate (Corning Costar, Acton MA), allowing the DNA to bind to the reagent.  
15 The plate was scanned in a Fluoroskan II (Labsystems Oy, Helsinki, Finland) to measure the fluorescence of the sample and to quantify the concentration of DNA. A 5 µl to 10 µl  
10 aliquot of the reaction mixture was analyzed by electrophoresis on a 1 % agarose mini-gel to determine which reactions were successful in extending the sequence.

20 The extended nucleotides were desalted and concentrated, transferred to 384-well plates, digested with CviJI cholera virus endonuclease (Molecular Biology Research, Madison WI), and sonicated or sheared prior to religation into pUC 18 vector (Amersham  
25 Pharmacia Biotech). For shotgun sequencing, the digested nucleotides were separated on low concentration (0.6 to 0.8%) agarose gels, fragments were excised, and agar digested with Agar ACE (Promega). Extended clones were religated using T4 ligase (New England Biolabs, Beverly MA) into pUC 18 vector (Amersham Pharmacia Biotech), treated with  
30 Pfu DNA polymerase (Stratagene) to fill-in restriction site overhangs, and transfected into  
20 competent *E. coli* cells. Transformed cells were selected on antibiotic-containing media, individual colonies were picked and cultured overnight at 37°C in 384-well plates in LB/2x carb liquid media.  
35

The cells were lysed, and DNA was amplified by PCR using Taq DNA  
polymerase (Amersham Pharmacia Biotech) and Pfu DNA polymerase (Stratagene) with  
25 the following parameters: Step 1: 94°C, 3 min; Step 2: 94°C, 15 sec; Step 3: 60°C, 1 min;  
40 Step 4: 72°C, 2 min; Step 5: steps 2, 3, and 4 repeated 29 times; Step 6: 72°C, 5 min; Step 7: storage at 4°C. DNA was quantified by PICOGREEN reagent (Molecular Probes) as described above. Samples with low DNA recoveries were reamplified using the same  
45 conditions as described above. Samples were diluted with 20% dimethylsulphoxide (1:2,  
30 v/v), and sequenced using DYENAMIC energy transfer sequencing primers and the DYENAMIC DIRECT kit (Amersham Pharmacia Biotech) or the ABI PRISM BIGDYE Terminator cycle sequencing ready reaction kit (Perkin-Elmer).  
50

5 In like manner, the nucleotide sequences of SEQ ID NO:135-268 are used to obtain 5' regulatory sequences using the procedure above, oligonucleotides designed for such extension, and an appropriate genomic library.

10 **5 VI. Labeling and Use of Individual Hybridization Probes**

Hybridization probes derived from SEQ ID NO:135-268 are employed to screen cDNAs, genomic DNAs, or mRNAs. Although the labeling of oligonucleotides, consisting of about 20 base pairs, is specifically described, essentially the same procedure is used with larger nucleotide fragments. Oligonucleotides are designed using state-of-the-art software such as OLIGO 4.06 software (National Biosciences) and labeled by combining 50 pmol of each oligomer, 250  $\mu$ Ci of [ $\gamma$ - $^{32}$ P] adenosine triphosphate (Amersham Pharmacia Biotech), and T4 polynucleotide kinase (DuPont NEN, Boston MA). The labeled oligonucleotides are substantially purified using a SEPHADEX G-25 superfine size exclusion dextran bead column (Amersham Pharmacia Biotech). An aliquot containing  $10^7$  counts per minute of the labeled probe is used in a typical membrane-based hybridization analysis of human genomic DNA digested with one of the following endonucleases: Ase I, Bgl II, Eco RI, Pst I, Xba I, or Pvu II (DuPont NEN).

30 The DNA from each digest is fractionated on a 0.7% agarose gel and transferred to nylon membranes (Nytran Plus, Schleicher & Schuell, Durham NH). Hybridization is carried out for 16 hours at 40°C. To remove nonspecific signals, blots are sequentially washed at room temperature under increasingly stringent conditions up to 0.1 x saline sodium citrate and 0.5% sodium dodecyl sulfate. After XOMAT-AR film (Eastman Kodak, Rochester NY) is exposed to the blots to film for several hours, hybridization patterns are compared visually.

35 **25 VII. Microarrays**

40 A chemical coupling procedure and an ink jet device can be used to synthesize array elements on the surface of a substrate. (See, e.g., Baldeschweiler, *supra*.) An array analogous to a dot or slot blot may also be used to arrange and link elements to the surface of a substrate using thermal, UV, chemical, or mechanical bonding procedures. A typical array may be produced by hand or using available methods and machines and contain any appropriate number of elements. After hybridization, nonhybridized probes are removed and a scanner used to determine the levels and patterns of fluorescence. The degree of

5 complementarity and the relative abundance of each probe which hybridizes to an element on the microarray may be assessed through analysis of the scanned images.

Full-length cDNAs, Expressed Sequence Tags (ESTs), or fragments thereof may  
10 comprise the elements of the microarray. Fragments suitable for hybridization can be selected using software well known in the art such as LASERGENE software (DNASTAR). Full-length cDNAs, ESTs, or fragments thereof corresponding to one of the  
15 nucleotide sequences of the present invention, or selected at random from a cDNA library relevant to the present invention, are arranged on an appropriate substrate, e.g., a glass slide. The cDNA is fixed to the slide using, e.g., UV cross-linking followed by thermal  
20 and chemical treatments and subsequent drying. (See, e.g., Schena, M. et al. (1995) Science 270:467-470; Shalon, D. et al. (1996) Genome Res. 6:639-645.) Fluorescent probes are prepared and used for hybridization to the elements on the substrate. The substrate is analyzed by procedures described above.

### VIII. Complementary Polynucleotides

25 Sequences complementary to the HSPP-encoding sequences, or any parts thereof, are used to detect, decrease, or inhibit expression of naturally occurring HSPP. Although use of oligonucleotides comprising from about 15 to 30 base pairs is described, essentially the same procedure is used with smaller or with larger sequence fragments. Appropriate  
30 oligonucleotides are designed using OLIGO 4.06 software (National Biosciences) and the coding sequence of HSPP. To inhibit transcription, a complementary oligonucleotide is designed from the most unique 5' sequence and used to prevent promoter binding to the  
35 coding sequence. To inhibit translation, a complementary oligonucleotide is designed to prevent ribosomal binding to the HSPP-encoding transcript.

### 25 IX. Expression of HSPP

40 Expression and purification of HSPP is achieved using bacterial or virus-based expression systems. For expression of HSPP in bacteria, cDNA is subcloned into an appropriate vector containing an antibiotic resistance gene and an inducible promoter that directs high levels of cDNA transcription. Examples of such promoters include, but are  
45 not limited to, the *trp-lac* (*tac*) hybrid promoter and the T5 or T7 bacteriophage promoter in conjunction with the *lac* operator regulatory element. Recombinant vectors are  
50 transformed into suitable bacterial hosts, e.g., BL21(DE3). Antibiotic resistant bacteria

5 express HSPP upon induction with isopropyl beta-D-thiogalactopyranoside (IPTG).  
Expression of HSPP in eukaryotic cells is achieved by infecting insect or mammalian cell  
lines with recombinant Autographica californica nuclear polyhedrosis virus (AcMNPV),  
commonly known as baculovirus. The nonessential polyhedrin gene of baculovirus is  
10 replaced with cDNA encoding HSPP by either homologous recombination or bacterial-  
mediated transposition involving transfer plasmid intermediates. Viral infectivity is  
maintained and the strong polyhedrin promoter drives high levels of cDNA transcription.  
Recombinant baculovirus is used to infect Spodoptera frugiperda (Sf9) insect cells in most  
15 cases, or human hepatocytes, in some cases. Infection of the latter requires additional  
genetic modifications to baculovirus. (See Engelhard, E. K. et al. (1994) Proc. Natl. Acad.  
Sci. USA 91:3224-3227; Sandig, V. et al. (1996) Hum. Gene Ther. 7:1937-1945.)

20 In most expression systems, HSPP is synthesized as a fusion protein with, e.g.,  
glutathione S-transferase (GST) or a peptide epitope tag, such as FLAG or 6-His,  
permitting rapid, single-step, affinity-based purification of recombinant fusion protein  
25 from crude cell lysates. GST, a 26-kilodalton enzyme from Schistosoma japonicum,  
enables the purification of fusion proteins on immobilized glutathione under conditions  
that maintain protein activity and antigenicity (Amersham Pharmacia Biotech). Following  
purification, the GST moiety can be proteolytically cleaved from HSPP at specifically  
30 engineered sites. FLAG, an 8-amino acid peptide, enables immunoaffinity purification  
using commercially available monoclonal and polyclonal anti-FLAG antibodies (Eastman  
Kodak). 6-His, a stretch of six consecutive histidine residues, enables purification on  
metal-chelate resins (QIAGEN). Methods for protein expression and purification are  
35 discussed in Ausubel (1995, supra, ch 10 and 16). Purified HSPP obtained by these  
methods can be used directly in the following activity assay.

## 25 X. Demonstration of HSPP Activity

### 45 HSPP-68

30 HSPP-68 activity is measured by determining the potassium current using voltage  
clamp analysis on single Xenopus laevis oocytes injected with HSPP-68 cRNA. HSPP-  
68 cRNA is synthesized in vitro from linearized HSPP-68 encoding plasmids using the T7

RNA polymerase and injected into oocytes.. Injected oocytes are used two to four days after injection. In a 0.3 ml perfusion chamber, a single oocyte is impaled with two standard microelectrodes (1-2.5 M $\Omega$ ) filled with 3 M KCl. The oocyte is maintained under voltage clamp by using a Dagan TEV 200 amplifier, in buffer containing 96 mM NaCl, 2 mM KCl, 1.8 mM CaCl<sub>2</sub>, 2 mM MgCl<sub>2</sub>, 5 mM HEPES, pH 7.4 with NaOH. Stimulation of the preparation, data acquisition, and analysis is performed using a computer. All experiments are performed at room temperature (21-22 °C). Following a depolarizing pulse, the characteristics of the resulting potassium current are measured via the recording electrode. The amount of potassium current that flows in response to a unit depolarization is proportional to the activity of HSPP-68 in the cell. (Duprat, F. et al. (1997) EMBO J. 16:5464-5471.)

#### HSPP-92

HSPP-92 protein phosphatase activity is measured by the hydrolysis of P-nitrophenyl phosphate (PNPP). HSPP-92 is incubated together with PNPP in HEPES buffer pH 7.5, in the presence of 0.1% b-mercaptoethanol at 37°C for 60 min. The reaction is stopped by the addition of 6 ml of 10 N NaOH and the increase in light absorbance at 410 nm resulting from the hydrolysis of PNPP is measured using a spectrophotometer. The increase in light absorbance is proportional to the activity of PP in the assay. (Diamond R.H. et al (1994) Mol Cell Biol 14:3752-62.)

Alternatively, HSPP, or biologically active fragments thereof, are labeled with <sup>125</sup>I Bolton-Hunter reagent. (See, e.g., Bolton et al. (1973) Biochem. J. 133:529.) Candidate molecules previously arrayed in the wells of a multi-well plate are incubated with the labeled HSPP, washed, and any wells with labeled HSPP complex are assayed. Data obtained using different concentrations of HSPP are used to calculate values for the number, affinity, and association of HSPP with the candidate molecules.

Alternatively, an assay for HSPP activity measures the expression of HSPP on the cell surface. cDNA encoding HSPP is subcloned into an appropriate mammalian expression vector suitable for high levels of cDNA expression. The resulting construct is transfected into a nonhuman cell line such as NIH3T3. Cell surface proteins are labeled with biotin using methods known in the art. Immunoprecipitations are performed using HSPP-specific antibodies, and immunoprecipitated samples are analyzed using SDS-PAGE and immunoblotting techniques. The ratio of labeled immunoprecipitant to

unlabeled immunoprecipitant is proportional to the amount of HSPP expressed on the cell surface.

Alternatively, an assay for HSPP activity measures the amount of HSPP in secretory, membrane-bound organelles. Transfected cells as described above are harvested and lysed. The lysate is fractionated using methods known to those of skill in the art, for example, sucrose gradient ultracentrifugation. Such methods allow the isolation of subcellular components such as the Golgi apparatus, ER, small membrane-bound vesicles, and other secretory organelles. Immunoprecipitations from fractionated and total cell lysates are performed using HSPP-specific antibodies, and immunoprecipitated samples are analyzed using SDS-PAGE and immunoblotting techniques. The concentration of HSPP in secretory organelles relative to HSPP in total cell lysate is proportional to the amount of HSPP in transit through the secretory pathway.

#### XI. Functional Assays

HSPP function is assessed by expressing the sequences encoding HSPP at physiologically elevated levels in mammalian cell culture systems. cDNA is subcloned into a mammalian expression vector containing a strong promoter that drives high levels of cDNA expression. Vectors of choice include pCMV SPORT (Life Technologies) and pCR3.1 (Invitrogen, Carlsbad CA), both of which contain the cytomegalovirus promoter. 5-10  $\mu$ g of recombinant vector are transiently transfected into a human cell line, preferably of endothelial or hematopoietic origin, using either liposome formulations or electroporation. 1-2  $\mu$ g of an additional plasmid containing sequences encoding a marker protein are co-transfected. Expression of a marker protein provides a means to distinguish transfected cells from nontransfected cells and is a reliable predictor of cDNA expression from the recombinant vector. Marker proteins of choice include, e.g., Green Fluorescent Protein (GFP; Clontech), CD64, or a CD64-GFP fusion protein. Flow cytometry (FCM), an automated, laser optics-based technique, is used to identify transfected cells expressing GFP or CD64-GFP, and to evaluate properties, for example, their apoptotic state. FCM detects and quantifies the uptake of fluorescent molecules that diagnose events preceding or coincident with cell death. These events include changes in nuclear DNA content as measured by staining of DNA with propidium iodide; changes in cell size and granularity as measured by forward light scatter and 90 degree side light scatter; down-regulation of DNA synthesis as measured by decrease in bromodeoxyuridine uptake; alterations in



5 expression of cell surface and intracellular proteins as measured by reactivity with specific antibodies; and alterations in plasma membrane composition as measured by the binding of fluorescein-conjugated Annexin V protein to the cell surface. Methods in flow  
10 cytometry are discussed in Ormerod, M. G. (1994) Flow Cytometry, Oxford, New York  
5 NY.

The influence of HSPP on gene expression can be assessed using highly purified populations of cells transfected with sequences encoding HSPP and either CD64 or CD64-GFP. CD64 and CD64-GFP are expressed on the surface of transfected cells and bind to  
15 conserved regions of human immunoglobulin G (IgG). Transfected cells are efficiently  
10 separated from nontransfected cells using magnetic beads coated with either human IgG or antibody against CD64 (DYNAL, Lake Success NY). mRNA can be purified from the  
20 cells using methods well known by those of skill in the art. Expression of mRNA encoding HSPP and other genes of interest can be analyzed by northern analysis or microarray techniques.

## 25 XII. Production of HSPP Specific Antibodies

HSPP substantially purified using polyacrylamide gel electrophoresis (PAGE; see, e.g., Harrington, M.G. (1990) *Methods Enzymol.* 182:488-495), or other purification  
30 techniques, is used to immunize rabbits and to produce antibodies using standard protocols.

20 Alternatively, the HSPP amino acid sequence is analyzed using LASERGENE software (DNASTAR) to determine regions of high immunogenicity, and a corresponding oligopeptide is synthesized and used to raise antibodies by means known to those of skill  
35 in the art. Methods for selection of appropriate epitopes, such as those near the C-terminus or in hydrophilic regions are well described in the art. (See, e.g., Ausubel,  
25 1995, supra, ch. 11.)

40 Typically, oligopeptides 15 residues in length are synthesized using an ABI 431A Peptide Synthesizer (Perkin-Elmer) using fmoc-chemistry and coupled to KLH (Sigma-Aldrich, St. Louis MO) by reaction with N-maleimidobenzoyl-N-hydroxysuccinimide ester (MBS) to increase immunogenicity. (See, e.g., Ausubel, 1995, supra.) Rabbits are  
45 immunized with the oligopeptide-KLH complex in complete Freund's adjuvant. Resulting antisera are tested for anti-peptide activity by, for example, binding the peptide to plastic.  
50

blocking with 1% BSA, reacting with rabbit antisera, washing, and reacting with radio-iodinated goat anti-rabbit IgG.

### **XIII. Purification of Naturally Occurring HSPP Using Specific Antibodies**

Naturally occurring or recombinant HSPP is substantially purified by immunoaffinity chromatography using antibodies specific for HSPP. An immunoaffinity column is constructed by covalently coupling anti-HSPP antibody to an activated chromatographic resin, such as CNBr-activated SEPHAROSE (Amersham Pharmacia Biotech). After the coupling, the resin is blocked and washed according to the manufacturer's instructions.

Media containing HSPP are passed over the immunoaffinity column, and the column is washed under conditions that allow the preferential absorbance of HSPP (e.g., high ionic strength buffers in the presence of detergent). The column is eluted under conditions that disrupt antibody/HSPP binding (e.g., a buffer of pH 2 to pH 3, or a high concentration of a chaotrope, such as urea or thiocyanate ion), and HSPP is collected.

### **XIV. Identification of Molecules Which Interact with HSPP**

HSPP, or biologically active fragments thereof, are labeled with <sup>125</sup>I Bolton-Hunter reagent. (See, e.g., Bolton et al. (1973) Biochem. J. 133:529.) Candidate molecules previously arrayed in the wells of a multi-well plate are incubated with the labeled HSPP, washed, and any wells with labeled HSPP complex are assayed. Data obtained using different concentrations of HSPP are used to calculate values for the number, affinity, and association of HSPP with the candidate molecules.

Various modifications and variations of the described methods and systems of the invention will be apparent to those skilled in the art without departing from the scope and spirit of the invention. Although the invention has been described in connection with specific preferred embodiments, it should be understood that the invention as claimed should not be unduly limited to such specific embodiments. Indeed, various modifications of the described modes for carrying out the invention which are obvious to those skilled in molecular biology or related fields are intended to be within the scope of the following claims.

TABLE 1

Protein SEQ ID NO:	Nucleotide SEQ ID NO:	Clone ID	Library	Fragments
1	135	443531	MPHGN0T03	443531H1 (MPHGN0T03), 1406807F6 (LATRTUT02), 443531T6 (MPHGN0T03), SBAA00451F1, SBAA00676F1
2	136	632860	NEUTGMT01	632860H1 (NEUTGMT01), 784715R3 (PROSN0T05), 509590H1 (MPHGN0T03)
3	137	670010	CRBLN0T01	670010H1 (CRBLN0T01), 669971R1 (CRBLN0T01), 1553045F1 (BLADTUT04)
4	138	726498	SYNOOAT01	726498H1 (SYNOOAT01), 726498R6 (SYNOOAT01), 866599R3 (BRAITUT03)
5	139	795064	OVARNOT03	795064H1 (OVARNOT03), 4339458H1 (BRAUNOT02), 937603R3 (CERVNOT01), 2381151F6 (SLTNOT01), 1466346F6 (PANCUT02)
6	140	924925	BRAINOT04	924925H1 (BRAINOT04), 3268330H1 (BRAINOT20), 759120R3 (BRAITUT02)
7	141	962390	BRSTTU03	962390H1 (BRSTTU03), 1907958F6 (CONNTUT01), 023569F1 (ADENINB01), 167282F1 (LIVRNOT01), 1309211F1 (COLNFET02), SAUA00696F1, SAUA02860F1
8	142	1259405	MENITU03	1259405H1 (MENITU03), 2472425H1 (THPINOT03), 774303R1 (COLNNOT05), 152079F1 (BLADTUT04), 1693833F6 (COLNNOT23), 1831858T6.comp (THPIAZT01), 1527737T6.comp (UCMCL5T01)
9	143	1297384	BRSTNOT07	1297384H1 (BRSTNOT07), 1269310F6 (BRAINOT09), 1457367F1 (COLNFET02), 415587R1 (BRSTNOT01), SANA02967F1
10	144	1299627	BRSTNOT07	1299627H1 (BRSTNOT07), 1359140F6 (LUNGNOT09), 1349224F1 (LATRTUT02), SBAA01431F1, SBAA02909F1, SBAA01156F1
11	145	1306026	PLACNOT02	1306026H1 (PLACNOT02), 1464088R6 (PANCNOT04), SBAA02496F1, SBAA04305F1
12	146	1316219	BLADTUT02	1316219H1 (BLADTUT02), 2458603F6 (ENDANOT01), 2504756T6 (CONUTUT01)
13	147	1329031	PANCNOT07	1329031H1 (PANCNOT07), 1329031T6 (PANCNOT07), 1329031F6 (PANCNOT07)

TABLE 1 (cont.)

Protein SEQ ID NO:	Nucleotide SEQ ID NO:	Clone ID	Library	Fragments
14	148	1483050	CORPNOT02	1483050H1 (CORPNOT02), 855049H1 (NGANNOT01), 077017F1 (SYNORAB01), 1483050F6 (CORPNOT02), 1480024T6 (CORPNOT02), 1483050T6 (CORPNOT02), 759486R1 (BRAITUT02)
15	149	1514160	PANCTUT01	1514160H1 (PANCTUT01), 1866765T7 (SKINBIT01), 782676R1 (MYOMNOT01), 008055X4 (HMCINOT01), 008055X5 (HMCINOT01), 1866765F6 (SKINBIT01), SAOA03127F1
16	150	1603403	LUNGNOT15	1603403H1 (LUNGNOT15), 372910F1 (LUNGNOT02), 733299R7 (LUNGNOT03)
17	151	1652303	PROSTUT08	1652303H1 (PROSTUT08), 1671806H1 (BLADNOT05), 1341743T1 (COLNTUT03), 3803812H1 (BLADTUT03), 1878546F6 (LEUKNOT03), 1428640F1 (SINTBST01), 2058609R6 (OVARNOT03), 1331621F1 (PANCNOT07), 1306331T1 (PLACNOT02)
18	152	1693358	COLNNOT23	1693358H1 (COLNNOT23), 2498265H1 (ADRETUT05), 1867125F6 (SKINBIT01), 1693358T6 (COLNNOT23), 2245848R6 (HIPONON02)
19	153	1707711	DUODNOT02	1707711H1 (DUODNOT02), 1484609T1 (CORPNOT02), 1707711F6 (DUODNOT02), 1267959F1 (BRAINOT09), 1484609F1 (CORPNOT02), SAJA00930F1, SAJA01300R1, SAJA00999R1
20	154	1738735	COLNNOT22	1738735H1 (COLNNOT22), SAJA00944R1, SAJA00137F1, SAJA03629F1
21	155	1749147	STOMTUT02	1749147H1 (STOMTUT02), 1749147F6 (STOMTUT02), 1749147T6 (STOMTUT02)
22	156	1817722	PROSNOT20	1817722H1 (PROSNOT20), 2011085H1 (TESTNOT03)
23	157	1831290	THP1AZT01	1831290H1 (THP1AZT01), 3473958H1 (LUNGNOT27), 1972268F6 (UCMCLST01), 1301277F1 (BRSTNOT07), 1521574F1 (BLADTUT04), 1561690T6 (SPLNNOT04), 891461R1 (STOMTUT01)

TABLE 1 (cont.)

Protein SEQ ID NO:	Nucleotide SEQ ID NO:	Clone ID	Library	Fragments
24	158	1831477	THP1AZT01	1831477H1 (THP1AZT01), 1582867H1 (DUODNOT01), 1336769T1 (COLNNOT13), 1933092H1 (COLNNOT16), 1519909F1 (BLADTUT04), 1220946H1 (NEUTGMT01), 809556T1 (LUNGNOT04), 1217559T1 (NEUTGMT01), 1309223F1 (COLNFE02)
25	159	1841607	COLNNOT07	1841607H1 (COLNNOT07), SBHA03588F1
26	160	1852391	LUNGFET03	1852391H1 (LUNGFET03), 734140H1 (TONSNOT01), 1852391F6 (LUNGFET03)
27	161	1854555	HNT3AZT01	1854555H1 (HNT3AZT01), 251171H1 (CONUTUT01), 782453R1 (MYOMINOT01), 1854555F6 (HNT3AZT01), 1840675T6 (COLNNOT07), 2109736H1 (BRAITUT03)
28	162	1855755	PROSNOT18	1855755H1 (PROSNOT18), 3040236H1 (BRSTNOT16), 1283207F1 (COLNNOT16), 833763T1 (PROSNOT07), 1920926R6 (BRSTTUT01)
29	163	1861434	PROSNOT19	1861434H1 (PROSNOT19), 980291R1 (TONGTUT01), 1861434T6 (PROSNOT19), SARA01525F1, SARA02548F1
30	164	1872334	LEUKNOT02	1872334H1 (LEUKNOT02), 1872334F6 (LEUKNOT02), SBGA03684F1
31	165	1877230	LEUKNOT03	1877230H1 (LEUKNOT03), 2519841H1 (BRAITUT21), 1877230T6 (LEUKNOT03), 1254693F1 (LUNGFET03), 077020R1 (SYNORAB01), 1232336F1 (LUNGFET03), 1004952R6 (BRSTNOT03), SARA01879F1, SARA02654F1
32	166	1877885	LEUKNOT03	1877885H1 (LEUKNOT03), 508020F1 (TMLR3DT01), 2751126R6 (THP1AZS08), SARA02571F1
33	167	1889269	BLADTUT07	1889269H1 (BLADTUT07), 1915551H1 (PROSTUT04), 629493X12 (KIDNNOT05), 1441289F1 (THYRNOT03), 1215274X34F1 (BRSTTUT01), 1818447F6 (PROSNOT20), 1208463R1 (BRSTNOT02)
34	168	1890243	BLADTUT07	1890243H1 (BLADTUT07), SARA01884F1, SARA00046F1, SARA03294F1, SARA02790F1

TABLE 1 (cont.)

Protein SEQ ID NO:	Nucleotide SEQ ID NO:	Clone ID	Library	Fragments
35	169	1900433	BLADTUT06	1900433HI (BLADTUT06), SATA00396F1, SATA02742F1
36	170	1909441	CONNTU101	1909441HI (CONNTUT01), 1398811F1 (BRAITUT08), 3039939HI (BRSTNOT16), 3324740HI (PTHYNOT03), 1442131F6 (THYRNOT03), 2254056HI (OVAKTU101), 219945316 (SPLNFE102), 1692610F6 (COLNNOT23), 1698531HI (BLADTUT05)
37	171	1932226	COLNNOT16	1932226HI (COLNNOT16), 2320569HI (OVARNOT02), 1932226F6 (COLNNOT16), 2469455T6 (THP1NOT03), 2469455F6 (THP1NOT03), 1907140F6 (OVARNOT07), SATA02592F1
38	172	1932647	COLNNOT16	1932647HI (COLNNOT16), 1492745T1 (PROSNON01), 1492745HI (PROSNON01), SASA02355F1, SASA00117F1, SASA00192F1
39	173	2124245	BRSTNOT07	2124245HI (BRSTNOT07), 1235393F1 (LUNGNET03), 1402264F6 (LATRTUT02), 1303990F1 (PLACNOT02), 1402264T6 (LATRTUT02)
40	174	2132626	OVARNOT03	2132626HI (OVARNOT03), 1723432T6 (BLADNOT06), 2132626R6 (OVARNOT03), 1736723T6 (COLNNOT22), 1504738F1 (BRAITUT07)
41	175	2280639	PROSNON01	2280639HI (PROSNON01), 1435330HI (PANCNOT08), 1377560F6 (LUNGNOT10)
42	176	2292356	BRAINON01	2292356HI (BRAINON01), 4086827HI (LIVRNOT06), 1754442F6 (LIVRUT01), 3571126HI (HEAPNOT01), 1601305F6 (BLADNOT03)
43	177	2349310	COLSUCT01	2349310HI (COLSUCT01), 2349310T6 (COLSUCT01)
44	178	2373227	ADRENOT07	2373227HI (ADRENOT07), 3316444HI (PROSBPT03), 302685R6 (TESTNOT04), SASA02181F1, SASA01923F1, SASA03516F1
45	179	2457682	ENDANOT01	2457682HI (ENDANOT01), 2457682F6 (ENDANOT01)
46	180	2480426	SMCANOT01	2480426HI (SMCANOT01), 2480426F6 (SMCANOT01)

TABLE 1 (cont.)

Protein SEQ ID NO:	Nucleotide SEQ ID NO:	Clone ID	Library	Fragments
47	181	2503743	CONUTUT01	2503743HI (CONUTUT01), 1853909HI (HNT3AZT01), 1517619FI (PANCUT01), 1467896F6 (PANCUT02), 490031FI (HINT2AGT01), 1208654R1 (BRSTNOT02), 880544R1 (THYRNOT02)
48	182	2537684	BONRTUT01	2537684HI (BONRTUT01), 2005493HI (TESTNOT03), 730969HI (LUNGNOT03), 2537601F6 (BONRTUT01), 916487HI (BRSTNOT04), 996135R1 (KIDNTUT01), 1920738R6 (BRSTTUT01), 1957710F6 (CONNNOT01)
49	183	2593853	OVARTUT02	2593853HI (OVARTUT02), 807497HI (STOMNOT02), 914020R6 (STOMNOT02), 889992R1 (STOMTUT01)
50	184	2622354	KERANOT02	2622354HI (KERANOT02), 2623992HI (KERANOT02), 1556510F6 (BLADTUT04)
51	185	2641377	LUNGTUT08	2641377HI (LUNGTUT08), 4341415H2 (BRAUNOT02), SBDA07049F3
52	186	2674857	KIDNNOT19	2674857HI (KIDNNOT19), 1872373HI (LEUKNOT02), 470512R6 (MMLRIDT01), 1728547HI (PROSNOT14), 3013651F6 (MUSCNOT07), SBDA01366F1, SBDA00694F1
53	187	2758485	TIIP1AZS08	2758485HI (THIPIAZS08), 3097533HI (CERVNOT03), 1578959F6 (DUODNOT01)
54	188	2763296	BRSTNOT12	2763296HI (BRSTNOT12), 3486025F6 (KIDNNOT31), SBDA07002F3
55	189	2779436	OVARTUT03	2779436HI (OVARTUT03), 2779436F6 (OVARTUT03), SBDA07009F3
56	190	2808528	BLADTUT08	2808528HI (BLADTUT08), 2611513F6 (THYMNOT04), SBDA07021T3
57	191	2809230	BLADTUT08	2809230HI (BLADTUT08), 2213849HI (SINTFET03), 711706R6 (SYNORAT04), 958323R1 (KIDNNOT05), 030732F1 (TIIPINO01)
58	192	2816821	BRSTNOT14	2816821HI (BRSTNOT14), 3746964HI (THYMNOT08), 2816821F6 (BRSTNOT14), 948722T6 (PANCNOT05), 807947R6 (STOMNOT02)

TABLE 1 (cont.)

Protein SEQ ID NO:	Nucleotide SEQ ID NO:	Clone ID	Library	Fragments
59	193	2817268	BRSTNOT14	2817268H1 (BRSTNOT14), 3591308H1 (293TF5T01), 419522R1 (BRSTNOT01), 2073028F6 (ISLTNOT01), 1308781F6 (COLNFET02)
60	194	2923165	SININOT04	2923165H1 (SININOT04), 2011630H1 (TESTNOT03), 1457250F1 (COLNFET02), 754668R1 (BRAITUT02), 1406510F6 (LA TRTUT02)
61	195	2949822	KIDNFET01	2949822H1 (KIDNFET01), SBDA07078F3
62	196	2992192	KIDNFET02	2992192H1 (KIDNFET02), 2534324H2 (BRAINOT18), 2815255T6 (OVARNOT10), 1551107T6 (PROSNOT06), 1551107R6 (PROSNOT06)
63	197	2992458	KIDNFET02	2992458H1 (KIDNFET02), 2618951H1 (GBLANOT01), 1479252F1 (CORPNOT02), 1879054H1 (LEUKNOT03), 1879054F6 (LEUKNOT03), 2215240H1 (SINTFET03), 1535968T1 (SPLNNOT04)
64	198	3044710	HEAANOT01	3044710H1 (HEAANOT01), 3741773H1 (MENTNOT01), 859906X42C1 (BRAITUT03), 1534347F1 (SPLNNOT04), 1421122F1 (KIDNNOT09), 1303865F1 (PLACNOT02), 1704452F6 (DUODNOT02), 1251642F1 (LUNGFET03), 1781694R6 (PGANNON02)
65	199	3120415	LUNGTUT13	3120415H1 (LUNGTUT13), 1360123T1 (LUNGNOT12), 1375015H1 (LUNGNOT10)
66	200	126758	LUNGNOT01	126758H1 (LUNGNOT01), 126758X11 (LUNGNOT01), 811864T1 (LUNGNOT04)
67	201	674760	CRBLNOT01	674760H1 (CRBLNOT01), 3253976H1 (OVARNOT01), SAUA003387F1
68	202	1229438	BRAITUT01	1229438H1 (BRAITUT01), 1230616H1 (BRAITUT01), 1461187R1 (PANCNOT04), 2493039H1 (ADRETUT05), 2891628H1 (LUNGFET04)
69	203	1236935	LUNGFET03	1236935H1 (LUNGFET03), SBAA00983F1, SBAA02057F1, SBAA00170F1
70	204	1359283	LUNGNOT12	1359283H1 (LUNGNOT12), SBAA01213F1, SBAA03934F1
71	205	1450703	PENITUT01	551298F1 (BEPINOT01), 551298R1 (BEPINOT01), 1450703H1 (PENITUT01), 2748715H1 (LUNGTUT11)



TABLE 1 (cont.)

Protein SEQ ID NO:	Nucleotide SEQ ID NO:	Clone ID	Library	Fragments
72	206	1910668	CONNTUT01	1269346H1 (BRAINOT09), 1380872F1 (BRAITUT08), 1910668F6 (CONNTUT01), 1910668H1 (CONNTUT01), SATA02800F1, SATA03799F1, SARA02035F1
73	207	1955143	CONNNOT01	1955143F6 (CONNNOT01), 1955143H1 (CONNNOT01)
74	208	1961637	BRSTNOT04	867025H1 (BRAITUT03), 1961637H1 (BRSTNOT04), 2809064T6 (BLADTUT08), 2938714H1 (THYMFET02), 2956402H1 (KIDNFET01), 3808735T6 (CONTTUT01)
75	209	1990762	CORPNOT02	1990762H1 (CORPNOT02), 1990762T3 (CORPNOT02), SBGA04911F1, SBGA01201F1, SBGA02205F1
76	210	1994131	CORPNOT02	1994131H1 (CORPNOT02), 2645984F6 (OVARUT04)
77	211	1997745	BRSTTUT03	1752307F6 (LIVRTUT01), 1853730H1 (HNT3AZT01), 1997745H1 (BRSTTUT03), SAZA00953F1
78	212	2009035	TESTNOT03	2009035H1 (TESTNOT03), 2009035R6 (TESTNOT03)
79	213	2009152	TESTNOT03	2009152H1 (TESTNOT03), 2009152R6 (TESTNOT03), 2783263H1 (BRSTNOT13)
80	214	2061752	OVARNOT03	2061752H1 (OVARNOT03), 2061752T6 (OVARNOT03), 2732805H1 (OVARUT04), SAZA01310F1, SAZA00830F1
81	215	2061933	OVARNOT03	046580R1 (CORNNOT01), 746061R1 (BRAITUT01), 826996R1 (PROSNOT06), 2061933H1 (OVARNOT03)
82	216	2081422	UTRSNOT08	2081422F6 (UTRSNOT08), 2081422H1 (UTRSNOT08), SBCA04793F1, SBCA05657F1, SBDA00063F1
83	217	2101278	BRAITUT02	2101278H1 (BRAITUT02), SAXA00399F1, SAXA01284F1, SAXA01227F1
84	218	2121353	BRSTNOT07	341437H1 (NEUTFMT01), 687136H1 (UTRSNOT02), 2121353H1 (BRSTNOT07), SASA01311F1

TABLE 1 (cont.)

Protein SEQ ID NO:	Nucleotide SEQ ID NO:	Clone ID	Library	Fragments
85	219	2241736	PANCTUT02	833263HI (PROSTUT04), 2241736HI (PANCTUT02), SAA01148F1, SASA03299F1, SASA01349F1
86	220	2271935	PROSNON01	2271935HI (PROSNON01), 2276774HI (PROSNON01), 2760171T6 (THPIAZS08)
87	221	2295344	BRSTNOT05	2295344HI (BRSTNOT05), 3288561F6 (BONRFET01), SBGA01801F1
88	222	2303994	BRSTNOT05	905482T1 (COLNNOT08), 1858636F6 (PROSNOT18), 2303994HI (BRSTNOT05)
89	223	2497805	ADRETUT05	2497805F6 (ADRETUT05), 2497805HI (ADRETUT05)
90	224	2646362	LUNGTUT11	1754702HI (LIVRTUT01), 2640776T6 (LUNGTUT08), 2646362HI (LUNGTUT11), 3356773HI (PROSTUT16)
91	225	2657146	LUNGTUT09	2657146F6 (LUNGTUT09), 2657146HI (LUNGTUT09)
92	226	2755786	THPIAZS08	288436R1 (EOSIHE02), 1252824F6 (LUNGFET03), 1305549HI (PLACNOT02), 1364975R1 (SCORN002), 2018293HI (THPINOT01), 2047320HI (THPI17T01), 2184537F6 (SININOT01), 2755786HI (THPIAZS08), 4111022HI (PROSBPT07)
93	227	2831245	TYMNOT03	2831245HI (TYMNOT03), SBMA01396F1
94	228	3116250	LUNGTUT13	126263F1 (LUNGNOT01), 2729942HI (OVARUT04), 3116250HI (LUNGTUT13)
95	229	3129630	LUNGTUT12	3129630F6 (LUNGTUT12), 3129630HI (LUNGTUT12), SBDA06436F1
96	230	007632	HMCINOT01	007632HI (HMCINOT01), 007632R6 (HMCINOT01), 007632T6 (HMCINOT01)
97	231	1236968	LUNGFET03	1236968HI (LUNGFET03), SBAA02713F1, SBAA03203F1, SBAA04196F1
98	232	1334153	COLNNOT13	776410R1 (COLNNOT05), 1334153HI (COLNNOT13), 1334153T1 (COLNNOT13), 1800085F6 (COLNNOT27), 2701948HI (OVARUT10)

TABLE 1 (cont.)

Protein SEQ ID NO:	Nucleotide SEQ ID NO:	Clone ID	Library	Fragments
99	233	1396975	BRAITUT08	864113HI (BRAITUT03), 876139R1 (LUNGAST01), 1268313F1 (BRAINOT09), 1351348T1 (LATRUT02), 1396975HI (BRAITUT08), 1485768F6 (CORPNOT02), 1815364F6 (PROSNOT20)
100	234	1501749	SINTBST01	079080R1 (SYNORAB01), 1501749HI (SINTBST01), 1724970HI (PROSNOT14)
101	235	1575240	LNODNOT03	081858R1 (SYNORAB01), 1575240HI (LNODNOT03), 3451462R6 (UTRSNON03)
102	236	1647884	PROSTUT09	1647884HI (PROSTUT09), 1647884T6 (PROSTUT09), 3998922R6 (HNT7AZS07)
103	237	1661144	BRSTNOT09	720941X17 (SYNOOAT01), 1661144HI (BRSTNOT09), 2181782HI (SININOT01)
104	238	1685409	PROSNOT15	755203R1 (BRAITUT02), 1226185T1 (COLNNOT01), 1300837F1 (BRSTNOT07), 1685409HI (PROSNOT15), 1705256HI (DUODNOT02)
105	239	1731419	BRSTTUT08	1731419HI (BRSTTUT08), 1731419X319T3 (BRSTTUT08), 1731419X322F1 (BRSTTUT08), 1731419X326F1 (BRSTTUT08), 1731419X329F1 (BRSTTUT08), 1733786F6 (BRSTTUT08), SZAH01494F1
106	240	2650265	BRSTNOT14	1680316T6 (STOMFET01), 2650265HI (BRSTNOT14), 2650265T6 (BRSTNOT14), 2766058R6 (BRAINOS12)
107	241	2677129	KIDNNOT19	1592129HI (CARGNOT01), 2645962I1 (OVARTUT04), 2677129F6 (KIDNNOT19), 2677129HI (KIDNNOT19), 2910973HI (KIDNTUT15), 4571722HI (PROSTMT02), 4906791H2 (TYMNOT08)
108	242	3151073	ADRENON04	3150857T6 (ADRENON04), 3151073HI (ADRENON04), 3151073R6 (ADRENON04)
109	243	3170095	BRSTNOT18	3170095F6 (BRSTNOT18), 3170095HI (BRSTNOT18)

TABLE 1 (cont.)

Protein SEQ ID NO:	Nucleotide SEQ ID NO:	Clone ID	Library	Fragments
110	244	3475168	LUNGNOT27	079680F1 (SYNORAB01), 443811T6 (MPHGNOT03), 1509356T6 (LUNGNOT114), 1873596F6 (LEUKNOT02), 2440867H1 (EOSITXT01), 3475168H1 (LUNGNOT27)
111	245	3836893	DENDTN01	446637H1 (MPHGNOT03), 1219376R6 (NEUTGMT01), 3735467F6 (SMCCNOS01), 3735467T6 (SMCCNOS01), 3836893H1 (DENDTN01)
112	246	4072159	KIDNNOT26	2129415T6 (KIDNNOT05), 4072159F6 (KIDNNOT26), 4072159H1 (KIDNNOT26)
113	247	1003916	BRSTNOT03	620937R6 (PGANNOT01), 1003916H1 and 1003916R6 (BRSTNOT03), 1413623H1 (BRAINOT12), 1435945F1 (PANCNOT08), 1479127F1 (CORPNOT02), 1969146R6 (BRSTNOT04), 2517587F6 (BRAITUT21), 2967848H1 (SCORNOT04)
114	248	2093492	PANCNOT04	489651H1 (HINTZAGT01), 1265353T1 (SYNORAT05), 1431505R6 (BEPINOT01), 1605237F6 (LUNGNOT15), 2093492H1 and 2093492T6 (PANCNOT04), 4195560H1 (COLITUT02)
115	249	2108789	BRAITUT03	2108789H1 and 2108789R6 (BRAITUT03), 2182008T6 (SININOT01), 3255751R6 and 3255751T6 (OVARUNOT01)
116	250	2171401	ENDCNOT03	037241F1 (HUVENOB01), 1821492F6 (GBLAUTUT01), 2055814T6 (BEPINOT01), 2171401F6 and 2171401H1 (ENDCNOT03), 2668952F6 (ESOGTUT02), 3140313H1 and 3140313T6 (SMCCNOT02), 5031775H1 (EPHBTXT01)
117	251	2212530	SINTFET03	187596R6 and 187596T6 (CARDNOT01), 919634R6 (RATRNOT02), 1992331H1 (CORPNOT02), 2062034H1 (OVARNOT03), 2212530F6 and 2212530H1 (SINTFET03), 2520479H1 (BRAITUT21), 2878284F6 (THYRNOT10), 2992354H1 (KIDNFET02), 4020719F6 (BRAXNOT02)
118	252	2253036	OVARUT01	2253036H1 and 2253036R6 (OVARUT01)

TABLE 1 (cont.)

Protein SEQ ID NO:	Nucleotide SEQ ID NO:	Clone ID	Library	Fragments
119	253	2280161	PROSNON01	482326H1 (HNT2RAT01), 934345H1 (CERVNOT01), 1379358T1 and 1379358T1 (LUNGNOT10), 1438562T1 (PANCNOT08), 1467511F6 (PANCNOT02), 1568138F1 (UTRSNOT05), 1636106T6 (UTRSNOT06), 2134534F6 (ENDCNOT01), 2280161H1 and 2280161X19F1 (PROSNON01), 2789845F6 (COLNTUT16), 3096938H1 (CERVNOT03), 3774621F6 (BRSTNOT25), 4222971H1 (PANCNOT07), 5111983H1 (ENDITXT01), 5324177H1 (FIBPFEN06), 1454588F1 (PENITUT01), 1593332F6 (BRANOT14), 2287485H1 and 2287485R6 (BRANON01), 3765992H1 (BRSTNOT24), 4374293H1 (CONFNOT03), 4937931H1 (PROSTUS18), SBCA01722F1
120	254	2287485	BRAINON01	
121	255	2380344	ISLTNOT01	2380344F6 and 2380344H1 (ISLTNOT01), 2888536T3 (LUNGFE104), SASA03644F1, SASA03689F1
122	256	2383171	ISLTNOT01	956296R1 (KIDNNOT05), 1342250F1 (COLNTUT03), 1468046F1 and 1468046T1 (PANCNOT02), 2383171H1 (ISLTNOT01), SBYA05452U1, SBYA01369U1
123	257	2396046	THPIAZT01	2396046F6, 2396046H1 and 2396118T6 (THPIAZT01)
124	258	2456587	ENDANOT01	2456587H1 and 2456587T6 (ENDANOT01), 2872569H1 (THYRNOT10), SBCA03778F1, SBDA00115F1, SBCA02401F1, SBCA03351F1, SBCA05164F1, SBCA04783F1, SBCA00155F1, SBCA04141F1
125	259	2484813	BONRTUT01	1234970T1 (LUNGFE103), 1338090F6 (COLNNOT13), 2484813H1 (BONRTUT01), SBCA00053F1, SBCA02064F1, SBCA02151F1, SBCA03770F1, SBCA04866F1, SBCA03406F1
126	260	2493851	ADRETUT05	2493851H1 (ADRETUT05), 3805916F6 (BLADTUT03), 4500439H1 and 4500748H1 (BRAVXT02), 5120601H1 (SMCBUNT01)
127	261	2495719	ADRETUT05	603447R1 (BRSTTUT01), 2495719H1 (ADRETUT05), 2917493F6 (THYMFET03), 4647103H1 (PROSTUT20), SBRA04984D1

TABLE 1 (cont.)

Protein SEQ ID NO:	Nucleotide SEQ ID NO:	Clone ID	Library	Fragments
128	262	2614153	GBLANOT01	183133R6 (BRAINON01), 1966515R6 (BRSTNOT04), 2331103R6 (COLNNOT11), 2614153H1 (GBLANOT01), 2656691F6 (LUNGTTUT09), 3951176H1 (DRGCNOT01)
129	263	2655184	THYMNOT04	2655184H1 (THYMNOT04), SBDA05215F1, SBDA05213F1, SBDA01516F1
130	264	2848362	BRSTTUT13	1297974F1 and 1297974T6 (BRSTNOT07), 2630138F6 (COLNTUT15), 2848362H1 (BRSTTUT13)
131	265	2849906	BRSTTUT13	1541617R1 and 1541617T1 (SINTTUT01), 2684504F6 and 2684504T6 (LUNGNOT23), 2796805H1 (NPOLNOT01), 2849906H1 (BRSTTUT13)
132	266	2899137	DRGCNOT01	2899137H1 (DRGCNOT01), 3026490F6 and 3026490T6 (HEARFET02), 3483359H1 (KIDNNOT31)
133	267	2986229	CARGDIT01	1740227T6 (HIPONON01), 2986229H1 (CARGDIT01)
134	268	3222081	COLNNON03	1754079F6 (LIVRTUT01), 3222081H1 (COLNNON03), 4053813T6 (SPLNNOT13), 4230282H1 (BRAMDIT01), SBDA07029F3

TABLE 2

Protein SEQ ID NO:	Amino Acid Residues	Potential Phosphorylation Sites	Potential Glycosylation Sites	Signature Sequences	Identification	Analytical Methods
1	88	T83 S38 T76		M1 - A21		Signal Peptide HMM
2	128	S30 S40 T47 T119 W125		M1 - F28		Signal Peptide HMM
3	111	T70		M1 - T18		Signal Peptide HMM
4	110	S32 T64	N58	M1 - A29		Signal Peptide HMM
5	78	T27 S39 S39 S44 S22 T27 S28 S57		M1 - R24		Signal Peptide HMM
6	88	T55 S30 S40 T55	N34	M1 - N21		Signal Peptide HMM
7	227	S220 S70 S83 T131 S134 S141 T158 Y123	N100	M1 - Q20		Signal Peptide HMM
8	198	S62 T123 S142 S189 S62 T100 Y85	N60	M1 - A28		Signal Peptide HMM
9	65	T48		M1 - A29		Signal Peptide HMM
10	154			M1 - A29		Signal Peptide HMM

TABLE 2 (cont.)

Protein SEQ ID NO:	Amino Acid Residues	Potential Phosphorylation Sites	Potential Glycosylation Sites	Signature Sequences	Identification	Analytical Methods
11	237	T116 T26 T79 T85 T182 T188 T194 T206 S60 S123 S176 S213	N128	M1 - A19		Signal Peptide HMM
12	225	T158 S128	N166	M1 - G27		Signal Peptide HMM
13	117	S41		M1 - A23		Signal Peptide HMM
14	253	S49 T63 S92 T110 S127 T239	N42 N47 N72 N207	M1 - T20		Signal Peptide HMM
15	171	S43 S94 T114		M88 - R112		Signal Peptide HMM
16	78	S38 S43	N37	M1 - G19		Signal Peptide HMM
17	71	T64 T67		M1 - C19		Signal Peptide HMM
18	188	S36 T58 T133 Y31	N121 N171	M1 - A21		Signal Peptide HMM
19	80	S76		M1 - C19		Signal Peptide HMM
20	80			M1 - G25		Signal Peptide HMM
21	84	S39 S53 S60		M1 - G21		Signal Peptide HMM



TABLE 2 (cont.)

Protein SEQ ID NO:	Amino Acid Residues	Potential Phosphorylation Sites	Potential Glycosylation Sites	Signature Sequences	Identification	Analytical Methods
22	171	S41 T150		M3 - A21		Signal Peptide HMM
23	243	S3 S44 T75 S86 S183 S223 S36 S92 S205 Y40 Y110	N97	M1 - C25		Signal Peptide HMM
24	311	T5 S76 T82 T93 T109 S121 T137 T170 S184 S11 T53 S75 S84 T132 S223 S274 Y69	N49 N91 N108 N128 N135 N190	M1 - A32		Signal Peptide HMM
25	57			M1 - L29		Signal Peptide HMM
26	82	S46 Y26		M1 - S18		Signal Peptide HMM
27	115			M1 - G34		Signal Peptide HMM
28	327	S93 S50 S167 S233 S89 T105 T214 S302 T318	N138 N206	M1 - E25		Signal Peptide HMM
29	133	S63	N105	M1 - E29		Signal Peptide HMM
30	129	S21 S65 T93		M1 - G20		Signal Peptide HMM

TABLE 2

Protein SEQ ID NO:	Amino Acid Residues	Potential Phosphorylation Sites	Potential Glycosylation Sites	Signature Sequences	Identification	Analytical Methods
1	88	T83 S38 T76		M1 - A21		Signal Peptide HMM
2	128	S30 S40 T47 T119 W125		M1 - F28		Signal Peptide HMM
3	111	T70		M1 - T18		Signal Peptide HMM
4	110	S32 T64	N58	M1 - A29		Signal Peptide HMM
5	78	T27 S39 S39 S44 S22 T27 S28 S57		M1 - R24		Signal Peptide HMM
6	88	T35 S30 S40 T55	N34	M1 - N21		Signal Peptide HMM
7	227	S220 S70 S83 T131 S134 S141 T158 Y123	N100	M1 - Q20		Signal Peptide HMM
8	198	S62 T123 S142 S189 S62 T100 Y85	N60	M1 - A28		Signal Peptide HMM
9	65	T48		M1 - A29		Signal Peptide HMM
10	154			M1 - A29		Signal Peptide HMM

TABLE 2 (cont.)

Protein SEQ ID NO:	Amino Acid Residues	Potential Phosphorylation Sites	Potential Glycosylation Sites	Signature Sequences	Identification	Analytical Methods
11	237	T116 T26 T79 T85 T182 T188 T194 T206 S60 S123 S176 S213	N128	M1 - A19		Signal Peptide HMM
12	225	T158 S128	N166	M1 - G27		Signal Peptide HMM
13	117	S41		M1 - A23		Signal Peptide HMM
14	253	S49 T63 S92 T110 S127 T239	N42 N47 N72 N207	M1 - T20		Signal Peptide HMM
15	171	S43 S94 T114		M88 - R112		Signal Peptide HMM
16	78	S38 S43	N37	M1 - G19		Signal Peptide HMM
17	71	T64 T67		M1 - C19		Signal Peptide HMM
18	188	S36 T38 T133 Y31	N121 N171	M1 - A21		Signal Peptide HMM
19	80	S76		M1 - C19		Signal Peptide HMM
20	80			M1 - G25		Signal Peptide HMM
21	84	S39 S53 S60		M1 - G21		Signal Peptide HMM

TABLE 2 (cont.)

Protein SEQ ID NO:	Amino Acid Residues	Potential Phosphorylation Sites	Potential Glycosylation Sites	Signature Sequences	Identification	Analytical Methods
22	171	S41 T150		M3 - A21		Signal Peptide HMM
23	243	S3 S44 T75 S86 S183 S223 S36 S92 S205 Y40 Y110	N97	M1 - C25		Signal Peptide HMM
24	311	T5 S76 T82 T93 T109 S121 T137 T170 S184 S11 T53 S75 S84 T132 S223 S274 Y69	N49 N91 N108 N128 N135 N190	M1 - A32		Signal Peptide HMM
25	57			M1 - L29		Signal Peptide HMM
26	82	S46 Y26		M1 - S18		Signal Peptide HMM
27	115			M1 - G34		Signal Peptide HMM
28	327	S93 S50 S167 S233 S89 T105 T214 S302 T318	N138 N206	M1 - E25		Signal Peptide HMM
29	133	S63	N105	M1 - E29		Signal Peptide HMM
30	129	S21 S65 T93		M1 - G20		Signal Peptide HMM

TABLE 2 (cont.)

Protein SEQ ID NO:	Amino Acid Residues	Potential Phosphorylation Sites	Potential Glycosylation Sites	Signature Sequences	Identification	Analytical Methods
31	472	S164 T32 S42 T141 T154 S155 T235 T262 T271 T334 T376 S402 S421 S435 T441 S19 S29 T327 S378	N61 N179 N353 N356 N396	M1 - G20	hematopoietic lineage switch 2 (g3169729)	Signal Peptide HMM BLAST - GenBank
32	93	T21		M1 - A18		Signal Peptide HMM
33	92	S57 S5		M1 - G47		SPScan
34	143	T6 T14 T135		M9 - G40		Signal Peptide HMM
35	89	T15 S58 S66		M1 - A19		Signal Peptide HMM
36	560	T7 T76 S150 T224 S228 S257 S358 S474 S529 S539 T186 S219 S368 Y523	N163 N184 N379	M1 - E34		SPScan
37	197	T80 S163		M1 - G28		Signal Peptide HMM
38	437	T47 T146 S233 S391 S403 T43 S130 S273 S339 S364	N46 N189 N382	M1 - A21		Signal Peptide HMM

TABLE 2 (cont.)

Protein SEQ ID NO:	Amino Acid Residues	Potential Phosphorylation Sites	Potential Glycosylation Sites	Signature Sequences	Identification	Analytical Methods
39	330	S197 T49 T150 S193 T214 T215 T49 S111 S237	N46 N64 N166 N191	M1 - G28		Signal Peptide HMM
40	148	T73 S141	N29 N58 N71 N103	M1 - R24	receptor-activity-modifying protein (RAMP; g4165368)	Signal Peptide HMM BLAST - GenBank
41	188	S49		M1 - V25		Signal Peptide HMM
42	222	S89 S165 T174 T182 T83 S155		M1 - S24		Signal Peptide HMM
43	111	S54 S29 S98 S50 S57 T104		M1 - T23		Signal Peptide HMM
44	341	T29 S106 T120 S161 S195 S37 S47 T51 S136 S223 S230 S281		M1 - G22		Signal Peptide HMM
45	148	S21 T63 T63 A146	N40	M1 - G23		Signal Peptide HMM
46	87	S65		M1 - P18		Signal Peptide HMM

TABLE 2 (cont.)

Protein SEQ ID NO:	Amino Acid Residues	Potential Phosphorylation Sites	Potential Glycosylation Sites	Signature Sequences	Identification	Analytical Methods
47	383	T77 S95 S108 S280 S351 S121 S124 S153 T187	N93 N207	M1 - P23		Signal Peptide HMM
48	109	S25 S22		M1 - L18		Signal Peptide HMM
49	185	S62		M1 - A20		Signal Peptide HMM
50	110	T100 T73 S97 Y48	N71	M1 - C21		Signal Peptide HMM
51	126	S17 S110		M1 - G18		Signal Peptide HMM
52	488	S205 T31 S86 T236 S7 T447	N250 N321 N463	M1 - L25	putative involvement in cell wall structure or biosynthesis (g3738170)	Signal Peptide HMM BLAST - GenBank
53	197	T55 S34 S46 S69 T98 S108 T119 T167 S194 S2 S34 T153		M1 - A26		Signal Peptide HMM
54	84	S65 S36 T41 S51 S69 S81	N39	M1 - G25		Signal Peptide HMM
55	97	S56		M1 - A22		Signal Peptide HMM
56	140	S29		M1 - P23		Signal Peptide HMM

TABLE 2 (cont.)

Protein SEQ ID NO:	Amino Acid Residues	Potential Phosphorylation Sites	Potential Glycosylation Sites	Signature Sequences	Identification	Analytical Methods
57	285	S53 S108 T216 S253 S277	N153	M1 - A25		Signal Peptide HMM
58	262	S62 T166 S62 S71 Y246	N190	M1 - G28	3-acylating enzyme (Q44449)	Signal Peptide HMM RLAST - GENESEQ
59	189	S120 T154 T34 T37 S174		M1 - C22		Signal Peptide HMM
60	257	S98 T136 T67 S112 S234 S237		M55 - E84B		SPScan
61	82	T68	N67	M1 - G18		Signal Peptide HMM
62	202	T21 S117 S120		M1 - G27		Signal Peptide HMM
63	450	S107 S97 S146 S339 S440 S245 T303 S304 S399		M1 - G18		Signal Peptide HMM
64	322	T145 T214 T16 S24 S35 S45 T145 T269 S297 T300 T314 Y87	N53 N130 N289	M1 - G23		Signal Peptide HMM
65	104	S38 S25 S75		M1 - A18		Signal Peptide HMM



TABLE 2 (cont.)

Protein SEQ ID NO:	Amino Acid Residues	Potential Phosphorylation Sites	Potential Glycosylation Sites	Signature Sequences	Identification	Analytical Methods
66	93			M1 through about S18 Transmembrane: M1 through about Y17		SPscan HMM
67	71	S23 S64		M1 through about A24		SPscan HMM MOTIFS
68	394	S392 S393 S31 S127 S179 S334 T338 S358 T383 Y323	N53	M1 through about S31 Transmembrane: about M159 through about F178 about F109 through about S127 about F225 through about V243		SPScan HMM MOTIFS
69	72	S59	N69	M1 through about S23 Transmembrane: M1 through about L16		SPscan HMM MOTIFS
70	71	S11 T26		M1 through about Q18		SPscan HMM MOTIFS
71	247	S41 T79		M1 through about S25		SPscan HMM MOTIFS
72	73	S56		M1 through about G27		SPscan HMM MOTIFS

TABLE 2 (cont.)

Protein SEQ ID NO:	Amino Acid Residues	Potential Phosphorylation Sites	Potential Glycosylation Sites	Signature Sequences	Identification	Analytical Methods
73	70			M1 through about G20		SPscan HMM
74	67			M1 through about G30		SPscan HMM
75	91			M1 through about G26		SPScan
76	56	T29 S46 T51		M1 through about S19		SPscan HMM MOTIFS
77	112	S62 S65		M1 through about G27 Transmembrane: about W79 through about H97		SPscan HMM MOTIFS
78	54		N48	M1 through about N34		SPscan HMM MOTIFS
79	57	T33 R55		M1 through about C18		SPscan HMM MOTIFS
80	52	S34		M1 through about S30		SPscan HMM MOTIFS

TABLE 2 (cont.)

Protein SEQ ID NO:	Amino Acid Residues	Potential Phosphorylation Sites	Potential Glycosylation Sites	Signature Sequences	Identification	Analytical Methods
81	64	T43 Y27		M1 through about S41		SPscan HMM MOTIFS
82	65	S45		M1 through about A31 Transmembrane: about L38 through about F55		SPscan HMM MOTIFS
83	56			M1 through about E23		SPscan HMM
84	120	S69 S109	N89 N95	M1 through about A38 Transmembrane: about L23 through about T41		SPscan HMM MOTIFS
85	67	S28		M1 through about K30 Microbodies C-terminal targetting signal: A65KV		SPscan HMM MOTIFS
86	62	S29 S42 S46	N40	M1 through about S29		SPscan HMM MOTIFS
87	75	S25 S46		M1 through about L19 Transmembrane: about I3 through about G20		SPscan HMM MOTIFS

TABLE 2 (cont.)

Protein SEQ ID NO:	Amino Acid Residues	Potential Phosphorylation Sites	Potential Glycosylation Sites	Signature Sequences	Identification	Analytical Methods
88	80	T28		M1 through about A20		SPscan HMM MOTIFS
89	50	S11		M1 through about C48		SPscan HMM MOTIFS
90	116	S38		M1 through about Q22		SPscan HMM MOTIFS
91	67	S43		M1 through about P21		SPscan HMM MOTIFS
92	538	S415 S52 T77 S97 T178 T228 S282 S320 S332 S384 T401 T424 S483 S207 S230 S337 T410 Y263 Y365	N226	M1 through about S18 Tyrosine specific protein phosphatases signature: about V328 through about F340		SPscan BLOCKS PRINTS MOTIFS
93	58			M1 through about S25		SPscan HMM
94	119	S39		M1 through about S22 Transmembrane: about V3 through about S21		SPscan HMM MOTIFS

TABLE 2 (cont.)

Protein SEQ ID NO:	Amino Acid Residues	Potential Phosphorylation Sites	Potential Glycosylation Sites	Signature Sequences	Identification	Analytical Methods
95	128	S91		M1 through about G31 Transmembrane: about F108 through about L126		SPScan HMM MOTIFS
96	124	T115 T43 S91		M1-S20 P116-V124 (urotensin II signature)		SPScan HMM Motifs BLOCKS BLAST
97	182	S28 T70 S172 S25 S32 S48 S108 S131		M1-S23, M1-S25		SPScan HMM Motifs
98	237	S55 S88 S121 S135	N45 N73 N107 N118 N132 N172 N175 N185	M1-A16, M1-S21 C40-C198 (cysteine spacing pattern similar to that of RoBo-I)		SPScan HMM Motifs BLAST
99	160	S36 S59 T143		M1-A27		SPScan HMM Motifs
100	148	T76 S64 Y103		M1-S30, M1-G31		SPScan HMM Motifs
101	170	S78 T4 T30 S130 S25 S29 T122		M1-A23, M1-L28		SPScan HMM Motifs

TABLE 2 (cont.)

Protein SEQ ID NO:	Amino Acid Residues	Potential Phosphorylation Sites	Potential Glycosylation Sites	Signature Sequences	Identification	Analytical Methods
102	150	S50 S78 S91		M1-A26, M1-S28		SPScan HMM Motifs
103	142	T57 T80		M1-A25, M1-Q26		SPScan HMM Motifs
104	110	T3		M1-G18, M1-T25		SPScan HMM Motifs
105	120	T29 S40 S72		M1-Q22, M1-A20		SPScan HMM Motifs
106	135	T115 S38 T41	N32 N101	M1-Q26, M1-C25		SPScan HMM Motifs
107	301	S53 S217 S240 S283 T224		M1-A22		SPScan HMM Motifs
108	103	S88 T73 S84		M1-P19, M1-L22		SPScan HMM Motifs
109	95	T82 S52 S77	N50	M1-T15, M1-P19		SPScan HMM Motifs

TABLE 2 (cont.)

Protein SEQ ID NO:	Amino Acid Residues	Potential Phosphorylation Sites	Potential Glycosylation Sites	Signature Sequences	Identification	Analytical Methods
110	113	T84 S4		M1-P19, M1-A24		SPScan HMM Motifs
111	234	S179 S184 S51 T70 T158 S168 T228 Y29	N146 N191 N194	M1-A20	NK cell activating receptor (p4493702)	SPScan HMM Motifs BLAST - GenBank
112	119	S39 T61		M1-G30, M1-G27		SPScan HMM Motifs
113	200	S51 T46 S191		M1-G26 Signal Peptide	Signal Peptide Containing Protein, Homology with KIAA0206	SPScan Motifs BLAST
114	225			M1-Q29 Signal Peptide	Signal Peptide Containing Protein	SPScan
115	155	S29		M1-A20 Signal Peptide	Signal Peptide Containing Protein	HMM Motifs
116	468	S143 T156 T227 S235 T271 T293 T436 S453 S117 T148 T213 S263 S417 Y73	N280 N384	M1-G23 Signal Peptide	Signal Peptide Containing Protein	SPScan Motifs
117	403	S19 S320 S69 S151 T171 T97 S393 Y193 Y378	N87	M1-A24 Signal Peptide	Signal Peptide Containing Protein	HMM Motifs

TABLE 2 (cont.)

Protein SEQ ID NO:	Amino Acid Residues	Potential Phosphorylation Sites	Potential Glycosylation Sites	Signature Sequences	Identification	Analytical Methods
118	131	T131 S24 T79 T118 T123 T127	N116	M1-G25 Signal Peptide	Signal Peptide Containing Protein	SPScan Motifs
119	556	T176 S192 S196 T220 S344 S369 S476 T501 S529 S541 T548 T553 S48 S115 S121 T386 T424 S500 Y104	N62 N79 N127 N157 N160	M1-P21 Signal Peptide L226-W244, Y402-W422, V375-L392 and Y335-I376 Transmembrane Domains	Signal Peptide Containing Protein, Weakly similar to Putative Transmembrane Protein (P1M1) Precursor	SPScan Motifs HMM BLAST
120	514	T457 T80 S86 T141 T372 T420 S447 S94 T102 S112 T240 S297 S353 S470	N100 N168 N319	M1-G24 Signal Peptide	Signal Peptide Containing Protein,	SPScan Motifs
121	109	T46 S78 T12		M1-S15 Signal Peptide	Signal Peptide Containing Protein	SPScan Motifs
122	431	S57 T320 S339 S396 S100 S239		M1-L25 Signal Peptide	Signal Peptide Containing Protein, Weakly similar to OXAIL	SPScan Motifs BLAST
123	142			M1-W16 Signal Peptide	Signal Peptide Containing Protein	SPScan



TABLE 2 (cont.)

Protein SEQ ID NO:	Amino Acid Residues	Potential Phosphorylation Sites	Potential Glycosylation Sites	Signature Sequences	Identification	Analytical Methods
124	643	T8 S28 S77 T169 T199 T235 S252 T320 S402 T413 S414 S558 S22 T25 S56 S62 S120 T184 S329 T423 S475 S574 Y226	N251	M1-S28 Signal Peptide, D37-C81, W380-C437, W440- C492 and F526-C583 Thrombospondin Type I Domains	Signal Peptide Containing Protein, Thrombospondin Type 1 Protein	SPScan Motifs Pfam BLAST
125	568	S510 T24 T80 S91 T153 T165 S232 S248 S262 T300 T334 S380 S446 S16 T19 T60 S127 S273 T436 T531 S554 T364 Y135 Y489	N322	M1-T19 Signal Peptide	Signal Peptide Containing Protein	SPScan Motifs
126	125	T62 S27 T36		M1-R32 Signal Peptide, V4-L53 Glycosyl Hydrolase Family 9 Active Site Signature	Signal Peptide Containing Protein, Glycosyl Hydrolase Protein	SPScan Motifs PROFILE- SCAN
127	196	T105 T47 T36 S158		M1-S26 Signal Peptide, H79-H123 Ribosomal Protein S18 Signature	Signal Peptide Containing Protein, Ribosomal Protein S18	SPScan Motifs BLAST Pfam PROFILE- SCAN
128	214	S112 S131	N37 N92	M1-S35 Signal Peptide	Signal Peptide Containing Protein, Homology with GTP Binding Protein	SPScan Motifs BLAST

TABLE 2 (cont.)

Protein SEQ ID NO:	Amino Acid Residues	Potential Phosphorylation Sites	Potential Glycosylation Sites	Signature Sequences	Identification	Analytical Methods
129	88			M1-S24 Signal Peptide	Signal Peptide Containing Protein	HMM
130	260	S146 S179 S192 S239 S70 T126 T150	N50 N109	M1-A48 Signal Peptide, G59-S142 Immunoglobulin Domain	Signal Peptide Containing Protein, Immunoglobulin Superfamily Protein	SPScan Motifs Pfam
131	295	T176 T56 S72 S179 S256 S87		M1-A30 Signal Peptide	Signal Peptide Containing Protein	SPScan Motifs
132	183	S11 T41 T42 S83		M1-W24 Signal Peptide, E131-K168 and C105-H115 Adrenodoxin Iron-Sulfur Binding Signature, C111-Y116 Cytochrome C Heme Binding Signature, N69-A162 Iron-Sulfur Cluster Binding Domain	Signal Peptide Containing Protein, Adrenodoxin Family Iron-Sulfur Binding Protein, and Cytochrome C Family Heme Binding Protein	HMM Motifs BLOCKS PRINTS Pfam
133	113	S93 T89 Y9		M1-G30 Signal Peptide, V28-L74 PF00646 F-Box Domain	Signal Peptide Containing Protein, PF00646 F-Box Protein	SPScan Motifs Pfam
134	160	T46 T55 S65 S124 T125 T46		M1-A27 Signal Peptide	Signal Peptide Containing Protein, F45G2.10 and Yhr122wp Homology	SPScan Motifs BLAST

TABLE 3

Nucleotide SEQ ID NO:	Tissue Expression (Fraction of Total)	Disease/Condition-Specific Expression (Total of Fraction)	Vector
135	Hematopoietic/Immune (1.000)	Inflammation (1.000)	pBLUESCRIPT
136	Hematopoietic/Immune (0.750) Cardiovascular (0.250)	Inflammation (0.750) Cancer (0.250)	pSPORT1
137	Nervous (1.000)	Trauma (1.000)	pSPORT1
138	Musculoskeletal (1.000)	Inflammation (1.000)	pSPORT1
139	Gastrointestinal (0.714) Cardiovascular (0.143) Reproductive (0.143)	Cancer (0.714) Trauma (0.143)	pSPORT1
140	Nervous (1.000)	Neurological (0.500) Trauma (0.500)	pSPORT1
141	Reproductive (0.293) Gastrointestinal (0.146) Hematopoietic/Immune (0.146)	Cancer (0.524) Inflammation (0.256) Fetal (0.146)	pSPORT1
142	Reproductive (0.266) Gastrointestinal (0.170) Nervous (0.138)	Cancer (0.479) Inflammation (0.277) Fetal (0.181)	pINCY
143	Reproductive (0.417) Nervous (0.292) Developmental (0.125)	Cancer (0.417) Inflammation (0.250) Fetal (0.167)	pINCY
144	Reproductive (0.321) Cardiovascular (0.143) Developmental (0.143)	Cancer (0.464) Fetal (0.214) Inflammation (0.143)	pINCY
145	Reproductive (0.600) Gastrointestinal (0.400)	Cancer (0.400) Trauma (0.400) Inflammation (0.200)	pINCY
146	Cardiovascular (0.400) Dermatologic (0.200) Nervous (0.200)	Cancer (0.600) Fetal (0.600)	pINCY
147	Developmental (0.667) Gastrointestinal (0.333)	Fetal (0.667) Cancer (0.333)	pINCY
148	Reproductive (0.256) Nervous (0.248) Cardiovascular (0.137)	Cancer (0.479) Inflammation (0.214) Fetal (0.145)	pINCY
149	Reproductive (0.244) Nervous (0.178) Hematopoietic/Immune (0.167)	Cancer (0.433) Inflammation (0.322) Fetal (0.156)	pINCY

TABLE 3 (cont.)

Nucleotide SEQ ID NO:	Tissue Expression (Fraction of Total)	Disease/Condition-Specific Expression (Total of Fraction)	Vector
150	Cardiovascular (0.923) Developmental (0.077)	Cancer (0.692) Fetal (0.154) Inflammation (0.154)	pINCY
151	Reproductive (0.215) Nervous (0.190) Gastrointestinal (0.177)	Cancer (0.494) Inflammation (0.278) Trauma (0.152)	pINCY
152	Reproductive (0.200) Nervous (0.171) Hematopoietic/Immune (0.143)	Inflammation (0.371) Cancer (0.229) Fetal (0.200)	pINCY
153	Reproductive (0.333) Nervous (0.157) Hematopoietic/Immune (0.137)	Cancer (0.549) Inflammation (0.176) Fetal (0.137)	pINCY
154	Gastrointestinal (0.500) Urologic (0.167)	Inflammation (0.667) Cancer (0.167) Trauma (0.167)	pINCY
155	Gastrointestinal (0.429) Reproductive (0.286) Nervous (0.143)	Inflammation (0.429) Cancer (0.286) Trauma (0.143)	pINCY
156	Reproductive (1.000)	Cancer (0.500) Inflammation (0.500)	pINCY
157	Hematopoietic/Immune (0.346) Reproductive (0.154) Gastrointestinal (0.115)	Cancer (0.404) Inflammation (0.404) Fetal (0.212)	pINCY
158	Reproductive (0.236) Hematopoietic/Immune (0.217) Gastrointestinal (0.132)	Cancer (0.415) Inflammation (0.358) Fetal (0.142)	pINCY
159	Gastrointestinal (1.000)	Cancer (1.000)	pSPORT1
160	Developmental (0.500) Hematopoietic/Immune (0.250) Nervous (0.250)	Fetal (0.500) Inflammation (0.250) Trauma (0.250)	pINCY
161	Hematopoietic/Immune (0.250) Reproductive (0.250) Nervous (0.208)	Cancer (0.583) Fetal (0.292) Inflammation (0.250)	pINCY
162	Gastrointestinal (0.412) Reproductive (0.412) Cardiovascular (0.088)	Cancer (0.735) Inflammation (0.176) Fetal (0.029)	pINCY

TABLE 3 (cont.)

Nucleotide SEQ ID NO:	Tissue Expression (Fraction of Total)	Disease/Condition-Specific Expression (Total of Fraction)	Vector
163	Reproductive (0.298) Cardiovascular (0.170) Nervous (0.149)	Cancer (0.532) Inflammation (0.213) Fetal (0.191)	pINCY
164	Gastrointestinal (0.333) Hematopoietic/Immune (0.333) Reproductive (0.333)	Cancer (0.667) Inflammation (0.333)	pINCY
165	Reproductive (0.295) Gastrointestinal (0.159) Nervous (0.148)	Cancer (0.534) Inflammation (0.284) Fetal (0.091)	pINCY
166	Hematopoietic/Immune (0.538) Cardiovascular (0.077) Reproductive (0.077)	Inflammation (0.731) Cancer (0.154) Fetal (0.154)	pINCY
167	Reproductive (0.483) Gastrointestinal (0.121) Nervous (0.103)	Cancer (0.672) Inflammation (0.155)	pINCY
168	Gastrointestinal (0.222) Hematopoietic/Immune (0.222) Nervous (0.148)	Cancer (0.519) Inflammation (0.370) Fetal (0.259)	pINCY
169	Urologic (1.000)	Cancer (0.333) Fetal (0.333) Inflammation (0.333)	pINCY
170	Reproductive (0.214) Gastrointestinal (0.179) Nervous (0.143)	Cancer (0.643) Inflammation (0.143) Fetal (0.107)	pINCY
171	Reproductive (0.261) Developmental (0.174) Nervous (0.174)	Cancer (0.391) Fetal (0.304) Inflammation (0.217)	pINCY
172	Reproductive (0.357) Gastrointestinal (0.321) Cardiovascular (0.071)	Cancer (0.571) Inflammation (0.286) Fetal (0.107)	pINCY
173	Reproductive (0.306) Nervous (0.161) Cardiovascular (0.129)	Cancer (0.387) Inflammation (0.323) Fetal (0.226)	pINCY
174	Reproductive (0.229) Nervous (0.188) Cardiovascular (0.167)	Cancer (0.521) Inflammation (0.312) Trauma (0.146)	pSPORT1

TABLE 3 (cont.)

Nucleotide SEQ ID NO:	Tissue Expression (Fraction of Total)	Disease/Condition-Specific Expression (Total of Fraction)	Vector
175	Reproductive (0.444) Developmental (0.167) Cardiovascular (0.111)	Cancer (0.556) Fetal (0.278) Trauma (0.111)	pSPORT1
176	Reproductive (0.294) Gastrointestinal (0.176) Cardiovascular (0.118)	Cancer (0.765) Fetal (0.118) Inflammation (0.118)	pSPORT1
177	Gastrointestinal (1.000)	Cancer (0.667) Inflammation (0.333)	pINCY
178	Reproductive (0.385) Nervous (0.231) Gastrointestinal (0.154)	Cancer (0.385) Inflammation (0.385)	pINCY
179	Reproductive (0.500) Cardiovascular (0.167) Gastrointestinal (0.167)	Cancer (0.667) Fetal (0.167) Inflammation (0.167)	pBLUESCRIPT
180	Cardiovascular (0.231) Reproductive (0.231) Gastrointestinal (0.154)	Cancer (0.615) Inflammation (0.308) Fetal (0.154)	pINCY
181	Reproductive (0.324) Gastrointestinal (0.176) Cardiovascular (0.130)	Cancer (0.519) Inflammation (0.222) Fetal (0.157)	pINCY
182	Reproductive (0.320) Nervous (0.180) Gastrointestinal (0.120)	Cancer (0.580) Inflammation (0.160) Fetal (0.100)	pINCY
183	Gastrointestinal (0.667) Reproductive (0.333)	Cancer (1.000)	pINCY
184	Urologic (0.667) Dermatologic (0.333)	Cancer (0.667) Fetal (0.333)	pSPORT1
185	Cardiovascular (0.500) Reproductive (0.500)	Cancer (1.000)	pINCY
186	Reproductive (0.393) Developmental (0.107) Urologic (0.107)	Cancer (0.607) Fetal (0.179) Inflammation (0.107)	pINCY
187	Cardiovascular (0.400) Reproductive (0.333) Gastrointestinal (0.133)	Inflammation (0.467) Cancer (0.267) Fetal (0.267)	pSPORT1
188	Nervous (0.318) Reproductive (0.227) Urologic (0.136)	Cancer (0.636) Inflammation (0.136) Trauma (0.091)	pINCY

TABLE 3 (cont.)

Nucleotide SEQ ID NO:	Tissue Expression (Fraction of Total)	Disease/Condition-Specific Expression (Total of Fraction)	Vector
189	Cardiovascular (0.500) Reproductive (0.500)	Cancer (1.000)	pINCY
190	Reproductive (0.318) Nervous (0.227) Hematopoietic/Immune (0.136)	Cancer (0.500) Fetal (0.227) Inflammation (0.227)	pINCY
191	Reproductive (0.253) Cardiovascular (0.158) Gastrointestinal (0.147)	Cancer (0.463) Inflammation (0.232) Fetal (0.200)	pINCY
192	Reproductive (0.333) Gastrointestinal (0.286) Cardiovascular (0.095)	Cancer (0.571) Inflammation (0.333) Fetal (0.095)	pINCY
193	Reproductive (0.304) Cardiovascular (0.217) Gastrointestinal (0.130)	Cancer (0.435) Inflammation (0.391) Fetal (0.174)	pINCY
194	Reproductive (0.312) Nervous (0.188) Cardiovascular (0.125)	Cancer (0.438) Inflammation (0.250) Fetal (0.188)	pINCY
195	Developmental (1.000)	Fetal (1.000)	pINCY
196	Reproductive (0.233) Cardiovascular (0.209) Nervous (0.140)	Cancer (0.605) Fetal (0.186) Inflammation (0.116)	pINCY
197	Reproductive (0.182) Gastrointestinal (0.136) Hematopoietic/Immune (0.136)	Cancer (0.477) Inflammation (0.341) Fetal (0.182)	pINCY
198	Gastrointestinal (0.205) Reproductive (0.205) Cardiovascular (0.114)	Inflammation (0.341) Cancer (0.250) Fetal (0.227)	pINCY
199	Cardiovascular (0.520) Reproductive (0.280) Developmental (0.160)	Cancer (0.720) Fetal (0.200) Inflammation (0.080)	pINCY
200	Lung (0.958) Developmental (0.25) Musculoskeletal (0.042)	Cancer (0.583) Fetal or Proliferating (0.292) Inflammation (0.167)	pBLUESCRIPT
201	Reproductive (0.571) Musculoskeletal (0.143) Nervous (0.143) Urologic (0.143)	Cancer (0.429) Inflammation (0.571)	pSPORT1

TABLE 3 (cont.)

Nucleotide SEQ ID NO:	Tissue Expression (Fraction of Total)	Disease/Condition-Specific Expression (Total of Fraction)	Vector
202	Endocrine (0.250) Nervous (0.250) Cardiovascular (0.125) Developmental (0.125) Gastrointestinal (0.125) Reproductive (0.125)	Cancer (0.375) Inflammation (0.625) Fetal or Proliferating (0.125)	pSPORT1
203	Lung (1.000)	Fetal or Proliferating (1.000)	pINCY
204	Lung (0.500) Penis (0.500)	Cancer (0.500)	pINCY
205	Cardiovascular (0.231) Dermatologic (0.231) Reproductive (0.231)	Fetal or Proliferating (0.385) Cancer (0.308)	pINCY
206	Nervous (0.596) Reproductive (0.154) Gastrointestinal (0.077)	Cancer (0.442) Neurological (0.192) Inflammation (0.231)	pINCY
207	Gastrointestinal (1.000)	Inflammation (1.000)	pINCY
208	Reproductive (0.300) Hematopoietic/Immune (0.200) Nervous (0.150)	Cancer (0.450) Inflammation (0.400) Fetal or Proliferating (0.250)	pSPORT1
209	Heart (0.500) Brain (0.500)	Neurological (0.500) Inflammation (0.500)	pINCY
210	Nervous (0.625) Reproductive (0.250) Musculoskeletal (0.125)	Cancer (0.750) Fetal or Proliferating (0.250) Neurological (0.125)	pINCY
211	Nervous (0.261) Reproductive (0.304) Gastrointestinal (0.174)	Cancer (0.522) Fetal or Proliferating (0.174) Inflammation (0.130)	pSPORT1
212	Testis (1.000)	Inflammation (1.000)	pBLUESCRIPT
213	Nervous (0.400) Reproductive (0.400) Gastrointestinal (0.200)	Cancer (0.400) Inflammation (0.400) Neurological (0.200)	pBLUESCRIPT
214	Reproductive (0.476) Gastrointestinal (0.286) Cardiovascular (0.095)	Cancer (0.714) Inflammation (0.286) Neurological (0.048)	pSPORT1



TABLE 3 (cont.)

Nucleotide SEQ ID NO:	Tissue Expression (Fraction of Total)	Disease/Condition-Specific Expression (Total of Fraction)	Vector
215	Reproductive (0.284) Gastrointestinal (0.216) Nervous (0.176) Hematopoietic/Immune (0.108) Cardiovascular (0.108)	Cancer (0.486) Inflammation (0.351) Fetal or Proliferating (0.122)	pSPORT1
216	Uterus (0.500) Prostate (0.500)	Cancer (0.500) Inflammation (0.500)	pINCY
217	Nervous (0.429) Cardiovascular (0.143) Gastrointestinal (0.143) Hematopoietic/Immune (0.143) Reproductive (0.143)	Cancer (0.571) Inflammation (0.429) Fetal or Proliferating (0.285)	pSPORT1
218	Reproductive (0.450) Hematopoietic/Immune (0.200) Nervous (0.100) Gastrointestinal (0.100)	Cancer (0.650) Inflammation (0.200) Fetal or Proliferating (0.050)	pINCY
219	Reproductive (0.364) Cardiovascular (0.182) Nervous (0.182)	Cancer (0.636) Fetal or Proliferating (0.182) Inflammation (0.273)	pINCY
220	Prostate (1.000)	Inflammation (1.000)	pSPORT1
221	Developmental (0.333) Nervous (0.333) Reproductive (0.333)	Cancer (0.667) Fetal or Proliferating (0.667)	pSPORT1
222	Reproductive (0.393) Hematopoietic/Immune (0.180) Nervous (0.098) Cardiovascular (0.098)	Cancer (0.508) Inflammation (0.344) Fetal or Proliferating (0.066)	pSPORT1
223	Endocrine (0.333) Gastrointestinal (0.333) Reproductive (0.333)	Cancer (1.000)	pINCY
224	Cardiovascular (0.200) Developmental (0.200) Gastrointestinal (0.200) Reproductive (0.200) Urologic (0.200)	Cancer (0.800) Fetal or Proliferating (0.200)	pINCY
225	Lung (1.000)	Cancer (1.000)	pINCY
226	Reproductive (0.302) Hematopoietic/Immune (0.254) Cardiovascular (0.111)	Cancer (0.381) Inflammation (0.381) Fetal or Proliferating (0.286)	pSPORT1

TABLE 3 (cont.)

Nucleotide SEQ ID NO:	Tissue Expression (Fraction of Total)	Disease/Condition-Specific Expression (Total of Fraction)	Vector
227	Lymphocytes (1.000)	Inflammation (1.000)	pINCY
228	Cardiovascular (0.531) Reproductive (0.250) Urologic (0.094)	Cancer (0.656) Inflammation (0.250) Fetal or Proliferating (0.094)	pINCY
229	Reproductive (0.333) Cardiovascular (0.167) Gastrointestinal (0.167) Endocrine (0.167) Hematopoietic/Immune (0.167)	Cancer (0.500) Fetal or Proliferating (0.167) Inflammation (0.333)	pINCY
230	Hematopoietic/Immune (0.500) Reproductive (0.500)	Cell Proliferation (0.500) Inflammation (0.500)	pBLUESCRIPT
231	Cardiovascular (0.333) Nervous (0.333) Developmental (0.167)	Cancer (0.500) Cell Proliferation (0.333) Inflammation (0.167)	pINCY
232	Gastrointestinal (0.938) Reproductive (0.062)	Cancer (0.500) Inflammation (0.500)	pINCY
233	Nervous (0.324) Reproductive (0.235) Hematopoietic/Immune (0.118)	Cancer (0.456) Inflammation (0.235) Trauma (0.147)	pINCY
234	Nervous (0.255) Reproductive (0.255) Musculoskeletal (0.182)	Cancer (0.545) Inflammation (0.255) Trauma (0.109)	pINCY
235	Musculoskeletal (0.308) Reproductive (0.231) Gastrointestinal (0.154)	Cancer (0.538) Inflammation (0.231) Trauma (0.154)	pINCY
236	Nervous (1.000)	Cancer (1.000)	pINCY
237	Gastrointestinal (0.429) Hematopoietic/Immune (0.143) Nervous (0.143)	Cancer (0.571) Cell Proliferation (0.143) Trauma (0.143)	pINCY
238	Reproductive (0.254) Gastrointestinal (0.160) Nervous (0.128)	Cancer (0.453) Inflammation (0.241) Cell Proliferation (0.175)	pINCY
239	Nervous (0.333) Dermatologic (0.167) Endocrine (0.167)	Trauma (0.333) Cancer (0.167) Cell Proliferation (0.167)	pINCY

TABLE 3 (cont.)

Nucleotide SEQ ID NO:	Tissue Expression (Fraction of Total)	Disease/Condition-Specific Expression (Total of Fraction)	Vector
240	Nervous (0.273) Reproductive (0.227) Endocrine (0.136)	Cancer (0.545) Cell Proliferation (0.182) Inflammation (0.182)	pINCY
241	Reproductive (0.273) Hematopoietic/Immune (0.182) Urologic (0.182)	Cancer (0.455) Cell Proliferation (0.273) Inflammation (0.273)	pINCY
242	Endocrine (1.000)	Trauma (1.000)	pSPORT1
243	Reproductive (1.000)	Cancer (1.000)	pINCY
244	Hematopoietic/Immune (0.545) Musculoskeletal (0.182) Cardiovascular (0.091)	Inflammation (0.636) Trauma (0.182) Cancer (0.091)	pINCY
245	Hematopoietic/Immune (0.400) Musculoskeletal (0.300) Cardiovascular (0.150)	Inflammation (0.650) Cancer (0.300)	pINCY
246	Urologic (1.000)	Cancer (0.500) Cell Proliferation (0.500)	pINCY
247	Nervous (0.292) Reproductive (0.222) Musculoskeletal (0.125)	Cell Proliferation (0.625) Inflammation/Trauma (0.181)	pSPORT1
248	Reproductive (0.211) Developmental (0.132) Nervous (0.132)	Cell Proliferation (0.658) Inflammation/Trauma (0.184)	pSPORT1
249	Nervous (0.500) Gastrointestinal (0.300) Hematopoietic/Immune (0.100)	Cell Proliferation (0.900) Inflammation/Trauma (0.300)	pSPORT1
250	Cardiovascular (0.209) Gastrointestinal (0.140) Hematopoietic/Immune (0.140)	Cell Proliferation (0.605) Inflammation/Trauma (0.256)	pINCY
251	Nervous (0.308) Cardiovascular (0.154) Gastrointestinal (0.154)	Cell Proliferation (0.616) Inflammation/Trauma (0.269)	pINCY
252	Reproductive (1.000)	Cell Proliferation (1.000)	pSPORT1

TABLE 3 (cont.)

Nucleotide SEQ ID NO:	Tissue Expression (Fraction of Total)	Disease/Condition-Specific Expression (Total of Fraction)	Vector
233	Reproductive (0.324) Nervous (0.162) Gastrointestinal (0.113)	Cell Proliferation (0.641) Inflammation/Trauma (0.197)	pSPORT1
254	Reproductive (0.315) Nervous (0.296) Developmental (0.093)	Cell Proliferation (0.630) Inflammation/Trauma (0.278)	pSPORT1
255	Nervous (0.211) Reproductive (0.211) Gastrointestinal (0.158)	Cell Proliferation (0.579) Inflammation/Trauma (0.298)	pINCY
256	Reproductive (0.250) Gastrointestinal (0.148) Hematopoietic/Immune (0.148)	Cell Proliferation (0.705) Inflammation/Trauma (0.193)	pINCY
257	Hematopoietic/Immune (1.000)	Cell Proliferation (0.400) Inflammation/Trauma (0.600)	pINCY
258	Cardiovascular (0.333) Reproductive (0.333) Developmental (0.167)	Cell Proliferation (0.833) Inflammation/Trauma (0.333)	pBLUESCRIPT
259	Cardiovascular (0.333) Reproductive (0.250) Developmental (0.167)	Cell Proliferation (0.625) Inflammation/Trauma (0.208)	pINCY
260	Endocrine (0.500) Cardiovascular (0.250) Nervous (0.250)	Cell Proliferation (0.750) Inflammation/Trauma (0.500)	pINCY
261	Reproductive (0.252) Cardiovascular (0.155) Hematopoietic/Immune (0.136)	Cell Proliferation (0.728) Inflammation/Trauma (0.194)	pINCY
262	Reproductive (0.274) Cardiovascular (0.177) Nervous (0.145)	Cell Proliferation (0.742) Inflammation/Trauma (0.210)	pINCY
263	Reproductive (0.267) Cardiovascular (0.160) Hematopoietic/Immune (0.127)	Cell Proliferation (0.654) Inflammation/Trauma (0.193)	pINCY
264	Nervous (0.229) Hematopoietic/Immune (0.200) Reproductive (0.200)	Cell Proliferation (0.743) Inflammation/Trauma (0.286)	pINCY
265	Hematopoietic/Immune (0.333) Gastrointestinal (0.167) Nervous (0.133)	Cell Proliferation (0.600) Inflammation/Trauma (0.333)	pINCY

TABLE 3 (cont.)

Nucleotide SEQ ID NO:	Tissue Expression (Fraction of Total)	Disease/Condition-Specific Expression (Total of Fraction)	Vector
266	Nervous (0.290) Reproductive (0.258) Cardiovascular (0.129)	Cell Proliferation (0.677) Inflammation/Trauma (0.194)	pINCY
267	Reproductive (0.261) Hematopoietic/Immune (0.217) Cardiovascular (0.087)	Cell Proliferation (0.652) Inflammation/Trauma (0.391)	pINCY
268	Gastrointestinal (0.227) Reproductive (0.193) Hematopoietic/Immune (0.168)	Cell Proliferation (0.731) Inflammation/Trauma (0.227)	pSPORT1

TABLE 4

Polynucleotide SEQ ID NO:	Clone ID	Library	Library Description
135	443531	MPHGN0T03	The library was constructed using RNA isolated from plastic adherent mononuclear cells isolated from buffy coat units obtained from unrelated male and female donors.
136	632860	NEUTGMT01	The library was constructed using RNA isolated from peripheral blood granulocytes collected by density gradient centrifugation through Ficoll-Hypaque. The cells were isolated from buffy coat units obtained from 20 unrelated male and female donors. Cells were cultured in 10 nM GM-CSF for 1 hour before washing and harvesting for RNA preparation.
137	670010	CRBLN0T01	The library was constructed using RNA isolated from the cerebellum tissue of a 69-year-old Caucasian male who died from chronic obstructive pulmonary disease. Patient history included myocardial infarction, hypertension, and osteoarthritis.
138	726498	SYNOOAT01	The library was constructed using RNA isolated from the knee synovial membrane tissue of an 82-year-old female with osteoarthritis.
139	795064	OVARN0T03	The library was constructed using RNA isolated from ovarian tissue removed from a 43-year-old Caucasian female during removal of the fallopian tubes and ovaries. Pathology for the associated tumor tissue indicated grade 2 mucinous cystadenocarcinoma. Patient history included mitral valve disorder, pneumonia, and viral hepatitis. Family history included atherosclerotic coronary artery disease, pancreatic cancer, cerebrovascular disease, breast cancer, and uterine cancer.
140	924925	BRAIN0T04	The library was constructed using RNA isolated from the brain tissue of a 44-year-old Caucasian male with a cerebral hemorrhage. The tissue, which contained coagulated blood, came from the choroid plexus of the right anterior temporal lobe. Family history included coronary artery disease and myocardial infarction.

TABLE 4 (cont.)

Polynucleotide SEQ ID NO:	Clone ID	Library	Library Description
141	962390	BRSTTUT03	The library was constructed using RNA isolated from breast tumor tissue removed from a 58-year-old Caucasian female during a unilateral extended simple mastectomy. Pathology indicated multicentric invasive grade 4 lobular carcinoma. The mass was identified in the upper outer quadrant, and three separate nodules were found in the lower outer quadrant of the left breast. Patient history included skin cancer, rheumatic heart disease, osteoarthritis, and tuberculosis. Family history included cerebrovascular disease, coronary artery aneurysm, breast cancer, prostate cancer, atherosclerotic coronary artery disease, and type I diabetes.
142	1259405	MENJUT03	The library was constructed using RNA isolated from brain meningioma tissue removed from a 35-year-old Caucasian female during excision of a cerebral meningeal lesion. Pathology indicated a benign neoplasm in the right cerebellopontine angle of the brain. Patient history included hypothyroidism. Family history included myocardial infarction and breast cancer.
143	1297384	BRSTNOT07	The library was constructed using RNA isolated from diseased breast tissue removed from a 43-year-old Caucasian female during a unilateral extended simple mastectomy. Pathology indicated mildly proliferative fibrocystic changes with epithelial hyperplasia, papillomatosis, and duct ectasia. Pathology for the associated tumor tissue indicated invasive grade 4, nuclear grade 3 mammary adenocarcinoma with extensive comedo necrosis. Family history included epilepsy, atherosclerotic coronary artery disease, and type II diabetes.
144	1299627	BRSTNOT07	The library was constructed using RNA isolated from diseased breast tissue removed from a 43-year-old Caucasian female during a unilateral extended simple mastectomy. Pathology indicated mildly proliferative fibrocystic changes with epithelial hyperplasia, papillomatosis, and duct ectasia. Pathology for the associated tumor tissue indicated invasive grade 4, nuclear grade 3 mammary adenocarcinoma with extensive comedo necrosis. Family history included epilepsy, atherosclerotic coronary artery disease, and type II diabetes.
145	1306026	PLACNOT02	The library was constructed using RNA isolated from the placental tissue of a Hispanic female fetus, who was prematurely delivered at 21 weeks' gestation. Serologies of the mother's blood were positive for CMV (cytomegalovirus).

TABLE 4 (cont.)

Polynucleotide SEQ ID NO:	Clone ID	Library	Library Description
146	1316219	BLADTUT02	The library was constructed using RNA isolated from bladder tumor tissue removed from an 80-year-old Caucasian female during a radical cystectomy and lymph node excision. Pathology indicated grade 3 invasive transitional cell carcinoma. Family history included osteoarthritis and atherosclerosis.
147	1329031	PANCN07	The library was constructed using RNA isolated from the pancreatic tissue of a Caucasian male fetus, who died at 23 weeks' gestation.
148	1483050	CORPNOT02	The library was constructed using RNA isolated from diseased corpus callosum tissue removed from the brain of a 74-year-old Caucasian male who died from Alzheimer's disease.
149	1514160	PANCTUT01	The library was constructed using RNA isolated from pancreatic tumor tissue removed from a 65-year-old Caucasian female during radical subtotal pancreatectomy. Pathology indicated an invasive grade 2 adenocarcinoma. Patient history included type II diabetes, osteoarthritis, cardiovascular disease, benign neoplasm in the large bowel, and a cataract. Family history included cardiovascular disease, type II diabetes, and stomach cancer.
150	1603403	LUNGNOT15	The library was constructed using RNA isolated from lung tissue removed from a 69-year-old Caucasian male during a segmental lung resection. Pathology for the associated tumor tissue indicated residual grade 3 invasive squamous cell carcinoma. Patient history included acute myocardial infarction, prostatic hyperplasia, and malignant skin neoplasm. Family history included cerebrovascular disease, type I diabetes, acute myocardial infarction, and arteriosclerotic coronary disease.
151	1652303	PROSTUT08	The library was constructed using RNA isolated from prostate tumor tissue removed from a 60-year-old Caucasian male during radical prostatectomy and regional lymph node excision. Pathology indicated an adenocarcinoma (Gleason grade 3+4). Adenofibromatous hyperplasia was also present. The patient presented with elevated prostate specific antigen (PSA). Patient history included a kidney cyst. Family history included tuberculosis, cerebrovascular disease, and arteriosclerotic coronary artery disease.



TABLE 4 (cont.)

Polynucleotide SEQ ID NO:	Clone ID	Library	Library Description
152	1693358	COLNNOT23	The library was constructed using RNA isolated from diseased colon tissue removed from a 16-year-old Caucasian male during a total colectomy with abdominal/perineal resection. Pathology indicated gastritis and pancolitis consistent with the acute phase of ulcerative colitis. There was only mild involvement of the ascending and sigmoid colon, and no significant involvement of the cecum, rectum, or terminal ileum. Family history included irritable bowel syndrome.
153	1707711	DUODNOT02	The library was constructed using RNA isolated from duodenal tissue of a 8-year-old Caucasian female, who died from head trauma. Serology was positive for cytomegalovirus (CMV).
154	1738735	COLNNOT22	The library was constructed using RNA isolated from colon tissue removed from a 56-year-old Caucasian female with Crohn's disease during a partial resection of the small intestine. Pathology indicated Crohn's disease of the ileum and ileal-colonic anastomosis, causing a fistula at the anastomotic site that extended into pericolic fat. The ileal mucosa showed linear and punctate ulcers with intervening normal tissue. Previous surgeries included a partial ileal resection and permanent ileostomy. Family history included irritable bowel syndrome.
155	1749147	STOMTUT02	The library was constructed using RNA isolated from stomach tumor tissue obtained from a 68-year-old Caucasian female during a partial gastrectomy. Pathology indicated a malignant lymphoma of diffuse large-cell type. Patient history included thalassemia. Family history included acute leukemia, malignant neoplasm of the esophagus, malignant stomach neoplasm, and atherosclerotic coronary artery disease.
156	1817722	PROSNOT20	The library was constructed using RNA isolated from diseased prostate tissue removed from a 65-year-old Caucasian male during a radical prostatectomy. Pathology indicated adenofibromatous hyperplasia. Pathology for the associated tumor tissue indicated an adenocarcinoma.
157	1831290	THPIAZT01	The library was constructed using 1 microgram of polyA RNA isolated from THP-1 promonocyte cells treated for three days with 0.8 micromolar 5-aza-2'-deoxycytidine. THP-1 (ATCC TIB 202) is a human promonocyte line derived from peripheral blood of a 1-year-old Caucasian male with acute monocytic leukemia.

TABLE 4 (cont.)

Polynucleotide SEQ ID NO:	Clone ID	Library	Library Description
158	1831477	THPIAZT01	The library was constructed using 1 microgram of polyA RNA isolated from THP-1 promonocyte cells treated for three days with 0.8 micromolar 5-aza-2'-deoxycytidine. THP-1 (ATCC TIB 202) is a human promonocyte line derived from peripheral blood of a 1-year-old Caucasian male with acute monocytic leukemia.
159	1841607	COLNNOT07	The library was constructed using RNA isolated from colon tissue removed from a 60-year-old Caucasian male during a left hemicolectomy.
160	1852391	LUNGFET03	The library was constructed using RNA isolated from lung tissue removed from a Caucasian female fetus, who died at 20 weeks' gestation.
161	1854555	HNT3AZT01	Library was constructed using RNA isolated from the hNT2 cell line (derived from a human teratocarcinoma that exhibited properties characteristic of a committed neuronal precursor). Cells were treated for three days with 0.35 micromolar 5-aza-2'-deoxycytidine (AZT).
162	1855755	PROSNOT18	The library was constructed using RNA isolated from diseased prostate tissue removed from a 58-year-old Caucasian male during a radical cystectomy, radical prostatectomy, and gastrectomy. Pathology indicated adenofibromatous hyperplasia. This tissue was associated with a grade 3 transitional cell carcinoma. Patient history included angina and emphysema. Family history included acute myocardial infarction, atherosclerotic coronary artery disease, and type II diabetes.
163	1861434	PROSNOT19	The library was constructed using RNA isolated from diseased prostate tissue removed from a 59-year-old Caucasian male during a radical prostatectomy with regional lymph node excision. Pathology indicated adenofibromatous hyperplasia. Pathology for the associated tumor tissue indicated an adenocarcinoma (Gleason grade 3+3). The patient presented with elevated prostate-specific antigen (PSA). Patient history included colon diverticuli and thrombophlebitis. Family history included benign hypertension, multiple myeloma, hyperlipidemia and rheumatoid arthritis.
164	1872334	LEUKNOT02	The library was constructed using RNA isolated from white blood cells of a 45-year-old female with blood type O+. The donor tested positive for cytomegalovirus (CMV).
165	1877230	LEUKNOT03	The library was constructed using RNA isolated from white blood cells of a 27-year-old female with blood type A+. The donor tested negative for cytomegalovirus (CMV).

TABLE 4 (cont.)

Polynucleotide SEQ ID NO:	Clone ID	Library	Library Description
166	1877885	LEUKNOT03	The library was constructed using RNA isolated from white blood cells of a 27-year-old female with blood type A+. The donor tested negative for cytomegalovirus (CMV).
167	1889269	BLADTUT07	The library was constructed using RNA isolated from bladder tumor tissue removed from the anterior bladder wall of a 58-year-old Caucasian male during a radical cystectomy, radical prostatectomy, and gastrectomy. Pathology indicated a grade 3 transitional cell carcinoma in the left lateral bladder. Patient history included angina and emphysema. Family history included acute myocardial infarction, atherosclerotic coronary artery disease, and type II diabetes.
168	1890243	BLADTUT07	The library was constructed using RNA isolated from bladder tumor tissue removed from the anterior bladder wall of a 58-year-old Caucasian male during a radical cystectomy, radical prostatectomy, and gastrectomy. Pathology indicated a grade 3 transitional cell carcinoma in the left lateral bladder. Patient history included angina and emphysema. Family history included acute myocardial infarction, atherosclerotic coronary artery disease, and type II diabetes.
169	1900433	BLADTUT06	The library was constructed using RNA isolated from bladder tumor tissue removed from the posterior bladder wall of a 58-year-old Caucasian male during a radical cystectomy, radical prostatectomy, and gastrectomy. Pathology indicated grade 3 transitional cell carcinoma in the left lateral bladder wall. Patient history included angina and emphysema. Family history included acute myocardial infarction, atherosclerotic coronary artery disease, and type II diabetes.
170	1909441	CONNTUT01	The library was constructed using RNA isolated from a soft tissue tumor removed from the clival area of the skull of a 30-year-old Caucasian female. Pathology indicated chondroid chordoma with neoplastic cells reactive for keratin.
171	1932226	COLNNOT16	The library was constructed using RNA isolated from sigmoid colon tissue removed from a 62-year-old Caucasian male during a sigmoidectomy and permanent colostomy.
172	1932647	COLNNOT16	The library was constructed using RNA isolated from sigmoid colon tissue removed from a 62-year-old Caucasian male during a sigmoidectomy and permanent colostomy.

TABLE 4 (cont.)

Polynucleotide SEQ ID NO:	Clone ID	Library	Library Description
173	2124245	BRSTNOT07	The library was constructed using RNA isolated from diseased breast tissue removed from a 43-year-old Caucasian female during a unilateral extended simple mastectomy. Pathology indicated mildly proliferative fibrocystic changes with epithelial hyperplasia, papillomatosis, and duct ectasia. Pathology for the associated tumor tissue indicated invasive grade 4, nuclear grade 3 mammary adenocarcinoma with extensive comedo necrosis. Family history included epilepsy, atherosclerotic coronary artery disease, and type II diabetes.
174	2132626	OVARNOT03	The library was constructed using RNA isolated from ovarian tissue removed from a 43-year-old Caucasian female during removal of the fallopian tubes and ovaries. Pathology for the associated tumor tissue indicated grade 2 mucinous cystadenocarcinoma. Patient history included mitral valve disorder, pneumonia, and viral hepatitis. Family history included atherosclerotic coronary artery disease, pancreatic cancer, cerebrovascular disease, breast cancer, and uterine cancer.
175	2280639	PROSNON01	The library was constructed and normalized from 4.4 million independent clones from the PROSNOT11 library. Starting RNA was made from prostate tissue removed from a 28-year-old Caucasian male who died from a gunshot wound. The normalization and hybridization conditions were adapted from Soares, M.B. et al. (1994) Proc. Natl. Acad. Sci. USA 91:9228-9232, using a longer (19 hour) reannealing hybridization period.
176	2292356	BRAINON01	The library was constructed and normalized from 4.88 million independent clones from the BRAINOT03 library. Starting RNA was made from brain tissue removed from a 26-year-old Caucasian male during cranioplasty and excision of a cerebral meningeal lesion. Pathology for the associated tumor tissue indicated a grade 4 oligoastrocytoma in the right fronto-parietal part of the brain.
177	2349310	COLSUCT01	The library was constructed using RNA isolated from diseased sigmoid colon tissue obtained from a 70-year-old Caucasian male during colectomy with permanent ileostomy. Pathology indicated chronic ulcerative colitis. Patient history included benign neoplasm of the colon. Family history included atherosclerotic coronary artery disease and myocardial infarctions.
178	2373227	ADRENOT07	The library was constructed using RNA isolated from adrenal tissue removed from a 61-year-old female during a bilateral adrenalectomy. Patient history included an unspecified disorder of the adrenal glands.

TABLE 4 (cont.)

Polynucleotide SEQ ID NO:	Clone ID	Library	Library Description
179	2457682	ENDANOT01	The library was constructed using RNA isolated from aortic endothelial cell tissue from an explanted heart removed from a male during a heart transplant.
180	2480426	SMCANOT01	The library was constructed using RNA isolated from an aortic smooth muscle cell line derived from the explanted heart of a male during a heart transplant.
181	2503743	CONUTUT01	The library was constructed using RNA isolated from sigmoid mesentery tumor tissue obtained from a 61-year-old female during a total abdominal hysterectomy and bilateral salpingo-oophorectomy with regional lymph node excision. Pathology indicated a metastatic grade 4 malignant mixed müllerian tumor present in the sigmoid mesentery at two sites.
182	2537684	BONIRTUT01	The library was constructed using RNA isolated from rib tumor tissue removed from a 16-year-old Caucasian male during a rib osteotomy and a wedge resection of the lung. Pathology indicated a metastatic grade 3 (of 4) osteosarcoma, forming a mass involving the chest wall.
183	2593853	OVARTUT02	The library was constructed using RNA isolated from ovarian tumor tissue removed from a 51-year-old Caucasian female during an exploratory laparotomy, total abdominal hysterectomy, salpingo-oophorectomy, and an incidental appendectomy. Pathology indicated mucinous cystadenoma presenting as a multiloculated neoplasm involving the entire left ovary. The right ovary contained a follicular cyst and a hemorrhagic corpus luteum. The uterus showed proliferative endometrium and a single intramural leiomyoma. The peritoneal biopsy indicated benign glandular inclusions consistent with endosalpingiosis. Family history included atherosclerotic coronary artery disease, benign hypertension, breast cancer, and uterine cancer.
184	2622354	KERANOT02	The library was constructed using RNA isolated from epidermal breast keratinocytes (NHEK). NHEK (Clontech #CC-2501) is a human breast keratinocyte cell line derived from a 30-year-old black female during breast-reduction surgery.

TABLE 4 (cont.)

Polynucleotide SEQ ID NO:	Clone ID	Library	Library Description
185	2641377	LUNGUT08	The library was constructed using RNA isolated from lung tumor tissue removed from a 63-year-old Caucasian male during a right upper lobectomy with fiberoptic bronchoscopy. Pathology indicated a grade 3 adenocarcinoma. Patient history included atherosclerotic coronary artery disease, an acute myocardial infarction, rectal cancer, an asymptomatic abdominal aortic aneurysm, and cardiac dysrhythmia. Family history included congestive heart failure, stomach cancer, and lung cancer, type II diabetes, atherosclerotic coronary artery disease, and an acute myocardial infarction.
186	2674857	KIDNNOT19	The library was constructed using RNA isolated from kidney tissue removed from a 65-year-old Caucasian male during an exploratory laparotomy and nephroureterectomy. Pathology for the associated tumor tissue indicated a grade I renal cell carcinoma within the upper pole of the left kidney. Patient history included malignant melanoma of the abdominal skin, benign neoplasm of colon, cerebrovascular disease, and umbilical hernia. Family history included myocardial infarction, atherosclerotic coronary artery disease, cerebrovascular disease, prostate cancer, myocardial infarction, and atherosclerotic coronary artery disease.
187	2738485	THP1AZS08	The subtracted THP-1 promonocyte cell line library was constructed using 5.76 million clones from a 5-aza-2'-deoxycytidine (AZT) treated THP-1 cell library. Starting RNA was made from THP-1 promonocyte cells treated for three days with 0.8 micromolar AZT. The library was oligo(dT)-primed, and cDNAs were cloned directionally into the pSPORT1 vectoring system using SalI (5') and NotI (3'). The hybridization probe for subtraction was derived from a similarly constructed library, made from 1 microgram of polyA RNA isolated from untreated THP-1 cells. 5.76 million clones from the AZ-treated THP-1 cell library were then subjected to two rounds of subtractive hybridization with 5 million clones from the untreated THP-1 cell library. Subtractive hybridization conditions were based on the methodologies of Swaroop et al. (Nucl. Acids Res. (1991) 19:1954) and Bonaldo et al. (Genome Res (1996) 6: 791-806).
188	2763296	BRSTNOT12	The library was constructed using RNA isolated from diseased breast tissue removed from a 32-year-old Caucasian female during a bilateral reduction mastopexy. Pathology indicated nonproliferative fibrocystic disease. Family history included benign hypertension and atherosclerotic coronary artery disease.

TABLE 4 (cont.)

Polynucleotide SEQ ID NO:	Clone ID	Library	Library Description
189	2779436	OVARTUT03	The library was constructed using RNA isolated from ovarian tumor tissue removed from the left ovary of a 52-year-old mixed ethnicity female during a total abdominal hysterectomy, bilateral salpingo-oophorectomy, peritoneal and lymphatic structure biopsy, regional lymph node excision, and peritoneal tissue destruction. Pathology indicated an invasive grade 3 (of 4) seroanaplastic carcinoma forming a mass in the left ovary. The endometrium was atrophic. Multiple (2) leiomyomata were identified, one subserosal and 1 intramural. Pathology also indicated a metastatic grade 3 seroanaplastic carcinoma involving the omentum, cul-de-sac peritoneum, left broad ligament peritoneum, and mesentery colon. Patient history included breast cancer, chronic peptic ulcer, and joint pain. Family history included colon cancer, cerebrovascular disease, breast cancer, type II diabetes, esophagus cancer, and depressive disorder.
190	2808528	BLADTUT08	The library was constructed using RNA isolated from bladder tumor tissue removed from a 72-year-old Caucasian male during a radical cystectomy and prostatectomy. Pathology indicated an invasive grade 3 (of 3) transitional cell carcinoma in the right bladder base. Family history included myocardial infarction, cerebrovascular disease, brain cancer, and myocardial infarction.
191	2809230	BLADTUT08	The library was constructed using RNA isolated from bladder tumor tissue removed from a 72-year-old Caucasian male during a radical cystectomy and prostatectomy. Pathology indicated an invasive grade 3 (of 3) transitional cell carcinoma in the right bladder base. Patient history included pure hypercholesterolemia and tobacco abuse. Family history included myocardial infarction, cerebrovascular disease, brain cancer, and myocardial infarction.
192	2816821	BRSTNOT14	The library was constructed using RNA isolated from breast tissue removed from a 62-year-old Caucasian female during a unilateral extended simple mastectomy. Pathology for the associated tumor tissue indicated an invasive grade 3 (of 4), nuclear grade 3 (of 3) adenocarcinoma, ductal type. Ductal carcinoma in situ, comedo type, comprised 60% of the tumor mass. Metastatic adenocarcinoma was identified in one (of 14) axillary lymph nodes with no perinodal extension. The tumor cells were strongly positive for estrogen receptors and weakly positive for progesterone receptors. Patient history included a benign colon neoplasm, hyperlipidemia, and cardiac dysrhythmia. Family history included atherosclerotic coronary artery disease, myocardial infarction, colon cancer, ovarian cancer, lung cancer, and cerebrovascular disease.

TABLE 4 (cont.)

Polynucleotide SEQ ID NO:	Clone ID	Library	Library Description
193	2817268	BRSTNOT14	The library was constructed using RNA isolated from breast tissue removed from a 62-year-old Caucasian female during a unilateral extended simple mastectomy. Pathology for the associated tumor tissue indicated an invasive grade 3 (of 4), nuclear grade 3 (of 3) adenocarcinoma, ductal type. Ductal carcinoma in situ, comedo type, comprised 60% of the tumor mass. Metastatic adenocarcinoma was identified in one (of 14) axillary lymph nodes with no perinodal extension. The tumor cells were strongly positive for estrogen receptors and weakly positive for progesterone receptors. Patient history included a benign colon neoplasm, hyperlipidemia, and cardiac dysrhythmia. Family history included atherosclerotic coronary artery disease, myocardial infarction, colon cancer, ovarian cancer, lung cancer, and cerebrovascular disease.
194	2923165	SININOT04	The library was constructed using RNA isolated from diseased ileum tissue obtained from a 26-year-old Caucasian male during a partial colectomy, permanent colostomy, and an incidental appendectomy. Pathology indicated moderately to severely active Crohn's disease. Family history included enteritis of the small intestine.
195	2949822	KIDNFET01	The library was constructed using RNA isolated from kidney tissue removed from a Caucasian female fetus, who died at 17 weeks' gestation from anencephalus.
196	2992192	KIDNFET02	The library was constructed using RNA isolated from kidney tissue removed from a Caucasian male fetus, who was stillborn with a hypoplastic left heart and died at 23 weeks' gestation.
197	2992458	KIDNFET02	The library was constructed using RNA isolated from kidney tissue removed from a Caucasian male fetus, who was stillborn with a hypoplastic left heart and died at 23 weeks' gestation.
198	3044710	HEAANOT01	The library was constructed using RNA isolated from right coronary and right circumflex coronary artery tissue removed from the explanted heart of a 46-year-old Caucasian male during a heart transplantation. Patient history included myocardial infarction from total occlusion of the left anterior descending coronary artery, atherosclerotic coronary artery disease, hyperlipidemia, myocardial ischemia, dilated cardiomyopathy, and left ventricular dysfunction. Previous surgeries included cardiac catheterization. Family history included atherosclerotic coronary artery disease.



TABLE 4 (cont.)

Polynucleotide SEQ ID NO:	Clone ID	Library	Library Description
199	3120415	LUNGUT013	The library was constructed using RNA isolated from tumorous lung tissue removed from the right upper lobe of a 47-year-old Caucasian male during a segmental lung resection. Pathology indicated invasive grade 3 (of 4) adenocarcinoma. Family history included atherosclerotic coronary artery disease, and type II diabetes.
200	126758	LUNGNOT01	The library was constructed at Stratagene using RNA isolated from the lung tissue of a 72-year-old male.
201	674760	CRBLNOT01	The library was constructed using RNA isolated from the cerebellum tissue of a 69-year-old Caucasian male who died from chronic obstructive pulmonary disease. Patient history included myocardial infarction, hypertension, and osteoarthritis.
202	1229438	BRAITUT01	The library was constructed using RNA isolated from brain tumor tissue removed from a 50-year-old Caucasian female during a frontal lobectomy. Pathology indicated recurrent grade 3 oligoastrocytoma with focal necrosis and extensive calcification. Patient history included a speech disturbance and epilepsy. The patient's brain had also been irradiated with a total dose of 5,082 cGy (Fraction 8). Family history included a brain tumor.
203	1236935	LUNGFET03	The library was constructed using RNA isolated from lung tissue removed from a Caucasian female fetus who died at 20 weeks' gestation.
204	1359283	LUNGNOT12	The library was constructed using RNA isolated from lung tissue removed from a 78-year-old Caucasian male during a segmental lung resection and regional lymph node resection. Pathology indicated fibrosis pleura was puckered, but not invaded. Pathology for the associated tumor tissue indicated an invasive pulmonary grade 3 adenocarcinoma. Patient history included cerebrovascular disease, atherosclerotic coronary artery disease, thrombophlebitis, chronic obstructive pulmonary disease, and asthma. Family history included intracranial hematoma, cerebrovascular disease, arteriosclerotic coronary artery disease, and type I diabetes.

TABLE 4 (cont.)

Polynucleotide SEQ ID NO:	Clone ID	Library	Library Description
205	1450703	PENITUT01	The library was constructed using RNA isolated from tumor tissue removed from the penis of a 64-year-old Caucasian male during penile amputation. Pathology indicated a fungating invasive grade 4 squamous cell carcinoma involving the inner wall of the foreskin and extending onto the glans penis. Patient history included benign neoplasm of the large bowel, atherosclerotic coronary artery disease, angina pectoris, gout, and obesity. Family history included malignant pharyngeal neoplasm, chronic lymphocytic leukemia, and chronic liver disease.
206	1910668	CONNTUT01	The library was constructed using RNA isolated from a soft tissue tumor removed from the clival area of the skull of a 30-year-old Caucasian female. Pathology indicated chondroid chordoma with neoplastic cells reactive for keratin.
207	1955143	CONNNOT01	The library was constructed using RNA isolated from mesentery fat tissue obtained from a 71-year-old Caucasian male during a partial colectomy and permanent colostomy. Family history included atherosclerotic coronary artery disease, myocardial infarction, and extrinsic asthma.
208	1961637	BRSTNOT04	The library was constructed using RNA isolated from breast tissue removed from a 62-year-old East Indian female during a unilateral extended simple mastectomy. Pathology for the associated tumor tissue indicated an invasive grade 3 ductal carcinoma. Patient history included benign hypertension, hyperlipidemia, and hematuria. Family history included cerebrovascular and cardiovascular disease, hyperlipidemia, and liver cancer.
209	1990762	CORPNOT02	The library was constructed using RNA isolated from diseased corpus callosum tissue removed from the brain of a 74-year-old Caucasian male who died from Alzheimer's disease.
210	1994131	CORPNOT02	The library was constructed using RNA isolated from diseased corpus callosum tissue removed from the brain of a 74-year-old Caucasian male who died from Alzheimer's disease.

TABLE 4 (cont.)

Polynucleotide SEQ ID NO:	Clone ID	Library	Library Description
211	1997745	BRSTTUT03	The library was constructed using RNA isolated from breast tumor tissue removed from a 58-year-old Caucasian female during a unilateral extended simple mastectomy. Pathology indicated multicentric invasive grade 4 lobular carcinoma. The mass was identified in the upper outer quadrant, and three separate nodules were found in the lower outer quadrant of the left breast. Patient history included skin cancer, rheumatic heart disease, osteoarthritis, and tuberculosis. Family history included cerebrovascular disease, coronary artery aneurysm, breast cancer, prostate cancer, atherosclerotic coronary artery disease, and type I diabetes.
212	2009035	TESTNOT03	The library was constructed using polyA RNA isolated from testicular tissue removed from a 37-year-old Caucasian male who died from liver disease. Patient history included cirrhosis, jaundice, and liver failure.
213	2009152	TESTNOT03	The library was constructed using polyA RNA isolated from testicular tissue removed from a 37-year-old Caucasian male who died from liver disease. Patient history included cirrhosis, jaundice, and liver failure.
214	2061752	OVARNOT03	The library was constructed using RNA isolated from ovarian tissue removed from a 43-year-old Caucasian female during removal of the fallopian tubes and ovaries. Pathology for the associated tumor tissue indicated grade 2 mucinous cystadenocarcinoma. Patient history included mitral valve disorder, pneumonia, and viral hepatitis. Family history included atherosclerotic coronary artery disease, pancreatic cancer, stress reaction, cerebrovascular disease, breast cancer, and uterine cancer.
215	2061933	OVARNOT03	The library was constructed using RNA isolated from ovarian tissue removed from a 43-year-old Caucasian female during removal of the fallopian tubes and ovaries. Pathology for the associated tumor tissue indicated grade 2 mucinous cystadenocarcinoma. Patient history included mitral valve disorder, pneumonia, and viral hepatitis. Family history included atherosclerotic coronary artery disease, pancreatic cancer, stress reaction, cerebrovascular disease, breast cancer, and uterine cancer.

TABLE 4 (cont.)

Polynucleotide SEQ ID NO:	Clone ID	Library	Library Description
216	2081422	UTRSNOT08	The library was constructed using RNA isolated from uterine tissue removed from a 35-year-old Caucasian female during a vaginal hysterectomy with dilation and curettage. Pathology indicated that the endometrium was secretory phase with a benign endometrial polyp 1 cm in diameter. The cervix showed mild chronic cervicitis. Family history included atherosclerotic coronary artery disease and type II diabetes.
217	2101278	BRAITUT02	The library was constructed using RNA isolated from brain tumor tissue removed from the frontal lobe of a 58-year-old Caucasian male during excision of a cerebral meningial lesion. Pathology indicated a grade 2 metastatic hypernephroma. Patient history included a grade 2 renal cell carcinoma, insomnia, and chronic airway obstruction. Family history included a malignant neoplasm of the kidney.
218	2121353	BRSTNOT07	The library was constructed using RNA isolated from diseased breast tissue removed from a 43-year-old Caucasian female during a unilateral extended simple mastectomy. Pathology indicated mildly proliferative fibrocystic changes with epithelial hyperplasia, papillomatosis, and duct ectasia. Pathology for the associated tumor tissue indicated invasive grade 4, nuclear grade 3 mammary adenocarcinoma with extensive comedo necrosis. Family history included epilepsy, cardiovascular disease, and type II diabetes.
219	2241736	PANCTUT02	The library was constructed using RNA isolated from pancreatic tumor tissue removed from a 45-year-old Caucasian female during radical pancreaticoduodenectomy. Pathology indicated a grade 4 anaplastic carcinoma. Family history included benign hypertension, hyperlipidemia and atherosclerotic coronary artery disease.
220	2271935	PROSNON01	This normalized prostate library was constructed from 4.4 M independent clones from the PROSNOT11 library. Starting RNA was made from prostate tissue removed from a 28-year-old Caucasian male who died from a self-inflicted gunshot wound. The normalization and hybridization conditions were adapted from Soares, M.B. et al. (1994) Proc. Natl. Acad. Sci. USA 91:9228-9232, using a longer (19 hour) reannealing hybridization period.

TABLE 4 (cont.)

Polynucleotide SEQ ID NO:	Clone ID	Library	Library Description
221	2295344	BRSTNOT05	The library was constructed using RNA isolated from breast tissue removed from a 58-year-old Caucasian female during a unilateral extended simple mastectomy. Pathology for the associated tumor tissue indicated multicentric invasive grade 4 lobular carcinoma. Patient history included skin cancer, rheumatic heart disease, osteoarthritis, and tuberculosis. Family history included cerebrovascular and cardiovascular disease, breast and prostate cancer, and type I diabetes.
222	2303994	BRSTNOT05	The library was constructed using RNA isolated from breast tissue removed from a 58-year-old Caucasian female during a unilateral extended simple mastectomy. Pathology for the associated tumor tissue indicated multicentric invasive grade 4 lobular carcinoma. Patient history included skin cancer, rheumatic heart disease, osteoarthritis, and tuberculosis. Family history included cerebrovascular and cardiovascular disease, breast and prostate cancer, and type I diabetes.
223	2497805	ADRETUT05	The library was constructed RNA isolated from adrenal tumor tissue removed from a 52-year-old Caucasian female during a unilateral adrenalectomy. Pathology indicated a pheochromocytoma.
224	2646362	LUNGTUT11	The library was constructed using RNA isolated from lung tumor tissue removed from the right lower lobe a 57-year-old Caucasian male during a segmental lung resection. Pathology indicated an infiltrating grade 4 squamous cell carcinoma. Multiple intrapulmonary peribronchial lymph nodes showed metastatic squamous cell carcinoma. Patient history included a benign brain neoplasm and tobacco abuse. Family history included spinal cord cancer, type II diabetes, cerebrovascular disease, and malignant prostate neoplasm.
225	2657146	LUNGTUT09	The library was constructed using RNA isolated from lung tumor tissue removed from a 68-year-old Caucasian male during segmental lung resection. Pathology indicated invasive grade 3 squamous cell carcinoma and a metastatic tumor. Patient history included type II diabetes, thyroid disorder, depressive disorder, hyperlipidemia, esophageal ulcer, and tobacco use.

TABLE 4 (cont.)

Polynucleotide SEQ ID NO:	Clone ID	Library	Library Description
226	2755786	THP1AZS08	This subtracted THP-1 promonocyte cell line library was constructed using 5.76 million clones from a 5-aza-2'-deoxyuridine (AZ) treated THP-1 cell library. Starting RNA was made from THP-1 promonocyte cells treated for three days with 0.8 micromolar AZ. The hybridization probe for subtraction was derived from a similarly constructed library, made from RNA isolated from untreated THP-1 cells. 5.76 million clones from the AZ-treated THP-1 cell library were then subjected to two rounds of subtractive hybridization with 5 million clones from the untreated THP-1 cell library. Subtractive hybridization conditions were based on the methodologies of Swaroop et al., NAR (1991) 19:1954, and Bonaldo et al., Genome Research (1996) 6:791. THP-1 (ATCC TIB 202) is a human promonocyte line derived from peripheral blood of a 1-year-old Caucasian male with acute monocytic leukemia.
227	2831245	TYMNOT03	The library was constructed using RNA isolated from nonactivated Th1 cells. These cells were differentiated from umbilical cord CD4 T cells with IL-12 and B7-transfected COS cells.
228	3116250	LUNGUT13	The library was constructed using RNA isolated from tumorous lung tissue removed from the right upper lobe of a 47-year-old Caucasian male during a segmental lung resection. Pathology indicated invasive grade 3 (of 4) adenocarcinoma. Family history included atherosclerotic coronary artery disease, and type II diabetes.
229	3129630	LUNGUT12	The library was constructed using RNA isolated from tumorous lung tissue removed from a 70-year-old Caucasian female during a lung lobectomy of the left upper lobe. Pathology indicated grade 3 (of 4) adenocarcinoma and vascular invasion. Patient history included tobacco abuse, depressive disorder, anxiety state, and skin cancer. Family history included cerebrovascular disease, congestive heart failure, colon cancer, depressive disorder, and primary liver.
230	007632	HMCINOT01	The library was constructed using RNA isolated from the HMC-1 human mast cell line derived from a 52-year-old female. Patient history included mast cell leukemia.
231	1236968	LUNGFET03	The library was constructed using RNA isolated from lung tissue removed from a Caucasian female fetus who died at 20 weeks' gestation.
232	1334153	COLNNOT13	The library was constructed using RNA isolated from ascending colon tissue of a 28-year-old Caucasian male with moderate chronic ulcerative colitis.

TABLE 4 (cont.)

Polynucleotide SEQ ID NO:	Clone ID	Library	Library Description
233	1396975	BRAITUT08	The library was constructed using RNA isolated from brain tumor tissue removed from the left frontal lobe of a 47-year-old Caucasian male during excision of cerebral meningeal tissue. Pathology indicated grade 4 fibrillary astrocytoma with focal tumoral radionecrosis. Patient history included cerebrovascular disease, deficiency anemia, hyperlipidemia, epilepsy, and tobacco use. Family history included cerebrovascular disease and malignant prostate neoplasm.
234	1501749	SINTBST01	The library was constructed using RNA isolated from ileum tissue removed from an 18-year-old Caucasian female during bowel anastomosis. Pathology indicated Crohn's disease of the ileum. Family history included cerebrovascular disease and atherosclerotic coronary artery disease.
235	1575240	LNODNOT03	The library was constructed using RNA isolated from lymph node tissue removed from a 67-year-old Caucasian male during a segmental lung resection and bronchoscopy. This tissue was extensively necrotic with 10% viable tumor. Pathology for the associated tumor tissue indicated invasive grade 3-4 squamous cell carcinoma. Patient history included hemangioma. Family history included atherosclerotic coronary artery disease, benign hypertension, and congestive heart failure.
236	1647884	PROSTUT09	The library was constructed using RNA isolated from prostate tumor tissue removed from a 66-year-old Caucasian male during a radical prostatectomy, radical cystectomy, and urinary diversion. Pathology indicated grade 3 transitional cell carcinoma. Patient history included lung neoplasm, and benign hypertension. Family history included malignant breast neoplasm, tuberculosis, cerebrovascular disease, atherosclerotic coronary artery disease, and lung cancer.
237	1661144	BRSTNOT09	The library was constructed using RNA isolated from breast tissue removed from a 45-year-old Caucasian female during unilateral extended simple mastectomy. Pathology for the associated tumor tissue indicated invasive nuclear grade 2-3 adenocarcinoma. Patient history included valvuloplasty of mitral valve and rheumatic heart disease. Family history included cardiovascular disease and type II diabetes.

TABLE 4 (cont.)

Polynucleotide SEQ ID NO:	Clone ID	Library	Library Description
238	1685409	PROSNOT115	The library was constructed using RNA isolated from diseased prostate tissue removed from a 66-year-old Caucasian male during radical prostatectomy and regional lymph node excision. Pathology indicated adenofibromatous hyperplasia. Pathology for the associated tumor tissue indicated adenocarcinoma (Gleason grade 2+3). The patient presented with elevated prostate specific antigen (PSA). Family history included prostate cancer, secondary bone cancer, and benign hypertension.
239	1731419	BRSTTUT08	The library was constructed using RNA isolated from breast tumor tissue removed from a 45-year-old Caucasian female during unilateral extended simple mastectomy. Pathology indicated invasive nuclear grade 2-3 adenocarcinoma. Patient history included valvuloplasty of mitral valve and rheumatic heart disease. Family history included cardiovascular disease and type II diabetes.
240	2650265	BRSTNOT14	The library was constructed using RNA isolated from breast tissue removed from a 62-year-old Caucasian female during a unilateral extended simple mastectomy. Pathology for the associated tumor tissue indicated an invasive grade 3 (of 4), nuclear grade 3 (of 3) adenocarcinoma. Patient history included a benign colon neoplasm, hyperlipidemia, cardiac dysrhythmia, and obesity. Family history included cardiovascular and cerebrovascular disease and colon, ovary and lung cancer.
241	2677129	KIDNNOT19	The library was constructed using RNA isolated from kidney tissue removed a 65-year-old Caucasian male during an exploratory laparotomy and nephroureterectomy. Pathology for the associated tumor tissue indicated grade 1 renal cell carcinoma within the upper pole of the left kidney. Patient history included malignant melanoma of the abdominal skin, benign neoplasm of colon, cerebrovascular disease, and umbilical hernia. Family history included myocardial infarction, atherosclerotic coronary artery disease, cerebrovascular disease, and prostate cancer.
242	3151073	ADRENON04	The normalized adrenal gland library was constructed from 1.36 x 1e6 independent clones from an adrenal tissue library. Starting RNA was made from adrenal gland tissue removed from a 20-year-old Caucasian male who died from head trauma. The library was normalized in two rounds using conditions adapted from Soares et al. (PNAS (1994) 91:9228-9232) and Bonaldo et al. (Genome Res (1996) 6: 791-806) using a significantly longer (48-hours/round) reannealing hybridization period.



TABLE 4 (cont.)

Polynucleotide SEQ ID NO:	Clone ID	Library	Library Description
243	3170095	BRSTNOT18	The library was constructed using RNA isolated from diseased breast tissue removed from a 57-year-old Caucasian female during a unilateral simple extended mastectomy. Pathology indicated mildly proliferative breast disease. Patient history included breast cancer and osteoarthritis. Family history included type II diabetes, gallbladder and breast cancer, and chronic lymphocytic leukemia.
244	3475168	LUNGNOT27	The library was constructed using RNA isolated from lung tissue removed from a 17-year-old Hispanic female.
245	3836893	DENDTNT01	The library was constructed using RNA isolated from treated dendritic cells from peripheral blood.
246	4072159	KIDNNOT26	The library was constructed using RNA isolated from left kidney medulla and cortex tissue removed from a 53-year-old Caucasian female during a nephroureterectomy. Pathology for the associated tumor tissue indicated grade 2 renal cell carcinoma involving the lower pole of the kidney. Patient history included hyperlipidemia, cardiac dysrhythmia, menorrhagia, cerebrovascular disease, atherosclerotic coronary artery disease, and tobacco abuse. Family history included cerebrovascular disease and atherosclerotic coronary artery disease.
247	1003916	BRSTNOT03	The library was constructed using RNA isolated from diseased breast tissue removed from a 54-year-old Caucasian female during a bilateral radical mastectomy. Pathology for the associated tumor tissue indicated residual invasive grade 3 mammary ductal adenocarcinoma. Patient history included kidney infection and condyloma acuminatum. Family history included benign hypertension, hyperlipidemia and a malignant neoplasm of the colon.
248	2093492	PANCNOT04	The library was constructed using RNA isolated from the pancreatic tissue of a 5-year-old Caucasian male who died in a motor vehicle accident.
249	2108789	BRAITUT03	The library was constructed using RNA isolated from brain tumor tissue removed from the left frontal lobe of a 17-year-old Caucasian female during excision of a cerebral meningial lesion. Pathology indicated a grade 4 fibrillary giant and small-cell astrocytoma. Family history included benign hypertension and cerebrovascular disease.
250	2171401	ENDCNOT03	The library was constructed using RNA isolated from dermal microvascular endothelial cells removed from a neonatal Caucasian male.

TABLE 4 (cont.)

Polynucleotide SEQ ID NO:	Clone ID	Library	Library Description
251	2212530	SINTFET03	The library was constructed using RNA isolated from small intestine tissue removed from a Caucasian female fetus, who died at 20 weeks' gestation.
252	2253036	OVARTUT01	The library was constructed using RNA isolated from ovarian tumor tissue removed from a 43-year-old Caucasian female during removal of the fallopian tubes and ovaries. Pathology indicated grade 2 mucinous cystadenocarcinoma involving the entire left ovary. Patient history included mitral valve disorder, pneumonia, and viral hepatitis. Family history included atherosclerotic coronary artery disease, pancreatic cancer, stress reaction, cerebrovascular disease, breast cancer, and uterine cancer.
253	2280161	PROSNON01	The normalized prostate library was constructed from 4.4 M independent clones from the PROSNOT11 library. Starting RNA was made from prostate tissue removed from a 28-year-old Caucasian male who died from a self-inflicted gunshot wound. The normalization and hybridization conditions were adapted from Soares, M.B. et al. (1994) Proc. Natl. Acad. Sci. USA 91:9228-9232, using a longer (19 hour) reannealing hybridization period.
254	2287485	BRAINON01	The library was constructed and normalized from 4.88 million independent clones from the BRAINOT03 library. RNA was made from brain tissue removed from a 26-year-old Caucasian male during cranioplasty and excision of a cerebral meningeal lesion. Pathology for the associated tumor tissue indicated a grade 4 oligoastrocytoma in the right fronto-parietal part of the brain.
255	2380344	ISLTNOT01	The library was constructed using RNA isolated from a pooled collection of pancreatic islet cells.
256	2383171	ISLTNOT01	The library was constructed using RNA isolated from a pooled collection of pancreatic islet cells.
257	2396046	THPIAZT01	The library was constructed using RNA isolated from THP-1 promonocyte cells treated for three days with 0.8 micromolar 5-aza-2'-deoxycytidine. THP-1 (ATCC TIB 202) is a human promonocyte line derived from peripheral blood of a 1-year-old Caucasian male with acute monocytic leukemia.
258	2456587	ENDANOT01	The library was constructed using RNA isolated from aortic endothelial cell tissue from an explanted heart removed from a male during a heart transplant.

TABLE 4 (cont.)

Polynucleotide SEQ ID NO:	Clone ID	Library	Library Description
259	2484813	BONRTUT01	The library was constructed using RNA isolated from rib tumor tissue removed from a 16-year-old Caucasian male during a rib osteotomy and a wedge resection of the lung. Pathology indicated a metastatic grade 3 (of 4) osteosarcoma, forming a mass involving the chest wall.
260	2493851	ADRETUT05	The library was constructed using RNA isolated from adrenal tumor tissue removed from a 52-year-old Caucasian female during a unilateral adrenalectomy. Pathology indicated a pheochromocytoma.
261	2495719	ADRETUT05	The library was constructed using RNA isolated from adrenal tumor tissue removed from a 52-year-old Caucasian female during a unilateral adrenalectomy. Pathology indicated a pheochromocytoma.
262	2614153	GBLANOT01	The library was constructed using RNA isolated from diseased gallbladder tissue removed from a 53-year-old Caucasian female during a cholecystectomy. Pathology indicated mild chronic cholecystitis and cholelithiasis with approximately 150 mixed gallstones. Family history included benign hypertension.
263	2655184	THYMNOT04	The library was constructed using RNA isolated from thymus tissue removed from a 3-year-old Caucasian male, who died from anoxia. Serologies were negative. The patient was not taking any medications.
264	2848362	BRSTTUT13	The library was constructed using RNA isolated from breast tumor tissue removed from the right breast of a 46-year-old Caucasian female during a unilateral extended simple mastectomy with breast reconstruction. Pathology indicated an invasive grade 3 adenocarcinoma, ductal type with apocrine features and greater than 50% intraductal component. Patient history included breast cancer.
265	2849906	BRSTTUT13	The library was constructed using RNA isolated from breast tumor tissue removed from the right breast of a 46-year-old Caucasian female during a unilateral extended simple mastectomy with breast reconstruction. Pathology indicated an invasive grade 3 adenocarcinoma, ductal type with apocrine features and greater than 50% intraductal component. Patient history included breast cancer.

TABLE 4 (cont.)

Polynucleotide SEQ ID NO:	Clone ID	Library	Library Description
266	2899137	DRGCNOT01	The library was constructed using RNA isolated from dorsal root ganglion tissue removed from the cervical spine of a 32-year-old Caucasian male who died from acute pulmonary edema and bronchopneumonia, bilateral pleural and pericardial effusions, and malignant lymphoma (natural killer cell type). Patient history included probable cytomegalovirus, infection, hepatic congestion and steatosis, splenomegaly, hemorrhagic cystitis, thyroid hemorrhage, and Bell's palsy. Surgeries included colonoscopy, large intestine biopsy, adenotonsillectomy, and nasopharyngeal endoscopy and biopsy; treatment included radiation therapy.
267	2986229	CARGDIT01	The library was constructed using RNA isolated from diseased cartilage tissue. Patient history included osteoarthritis.
268	3222081	COLNNON03	The normalized colon library was constructed from $2.84 \times 10^6$ independent clones from the COLNNOT07 library. Starting RNA was made from colon tissue removed from a 60-year-old Caucasian male during a left hemicolectomy. The normalization and hybridization conditions were adapted from Soares et al. (PNAS (1994) 91:9228-9232), Swaroop et al. (Nucl. Acids Res. (1991) 19:1954) and Bonaldo et al. (Genome Res (1996) 6: 791-806), using a significantly longer (48 hour) reannealing hybridization period.

Table 5

Program	Description	Reference	Parameter Threshold
ABI FACTURA	A program that removes vector sequences and masks ambiguous bases in nucleic acid sequences.	Perkin-Elmer Applied Biosystems, Foster City, CA.	
ABI/PARACEL FDF	A Fast Data Finder useful in comparing and annotating amino acid or nucleic acid sequences.	Perkin-Elmer Applied Biosystems, Foster City, CA; Paracel Inc., Pasadena, CA.	Mismatch <50%
ABI AutoAssembler	A program that assembles nucleic acid sequences.	Perkin-Elmer Applied Biosystems, Foster City, CA.	
BLAST	A Basic Local Alignment Search Tool useful in sequence similarity search for amino acid and nucleic acid sequences. BLAST includes five functions: blastp, blastn, blastx, tblastn, and tblastx.	Altschul, S.F. et al. (1990) J. Mol. Biol. 215:403-410; Altschul, S.F. et al. (1997) Nucleic Acids Res. 25: 3389-3402.	ESTs: Probability value= 1.0E-8 or less Full Length sequences: Probability value= 1.0E-10 or less
FASTA	A Pearson and Lipman algorithm that searches for similarity between a query sequence and a group of sequences of the same type. FASTA comprises at least five functions: fasta, tfasta, fastx, tfastx, and ssearch.	Pearson, W.R. and D.J. Lipman (1988) Proc. Natl. Acad. Sci. 85:2444-2448; Pearson, W.R. (1990) Methods Enzymol. 183: 63-98; and Smith, T.F. and M. S. Waterman (1981) Adv. Appl. Math. 2:482-489.	ESTs: fasta E value= 1.0E-6 Assembled ESTs: fasta Identity= 95% or greater and Match length=200 bases or greater; fastx E value= 1.0E-8 or less Full Length sequences: fastx score= 100 or greater
BLIMPS	A BLocks IMProved Searcher that matches a sequence against those in BLOCKS and PRINTS databases to search for gene families, sequence homology, and structural fingerprint regions.	Henikoff, S and J.G. Henikoff, Nucl. Acid Res., 19:6565-72, 1991. J.G. Henikoff and S. Henikoff (1996) Methods Enzymol. 266:88-105; and Attwood, T.K. et al. (1997) J. Chem. Inf. Comput. Sci. 37: 417-424.	Score= 1000 or greater; Ratio of Score/Strength = 0.75 or larger; and Probability value= 1.0E-3 or less
PFAM	A Hidden Markov Models-based application useful for protein family search.	Krogh, A. et al. (1994) J. Mol. Biol., 235:1501-1531; Sonnhammer, E.L.L. et al. (1988) Nucleic Acids Res. 26:320-322.	Score=10-50 bits, depending on individual protein families

Table 5 (cont.)

Program	Description	Reference	Parameter Threshold
ProfileScan	An algorithm that searches for structural and sequence motifs in protein sequences that match sequence patterns defined in Prosite.	Gribskov, M. et al. (1988) CABIOS 4:61-66; Gribskov, et al. (1989) Methods Enzymol. 183:146-159; Bairoch, A. et al. (1997) Nucleic Acids Res. 25: 217-221.	Score= 4.0 or greater
Phred	A base-calling algorithm that examines automated sequencer traces with high sensitivity and probability.	Ewing, B. et al. (1998) Genome Res. 8:175-185; Ewing, B. and P. Green (1998) Genome Res. 8:186-194.	
Phrap	A Phils Revised Assembly Program including SWAT and CrossMatch, programs based on efficient implementation of the Smith-Waterman algorithm, useful in searching sequence homology and assembling DNA sequences.	Smith, T.F. and M. S. Waterman (1981) Adv. Appl. Math. 2:482-489; Smith, T.F. and M. S. Waterman (1981) J. Mol. Biol. 147:195-197; and Green, P., University of Washington, Seattle, WA.	Score= 120 or greater; Match length= 56 or greater
Consed	A graphical tool for viewing and editing Phrap assemblies	Gordon, D. et al. (1998) Genome Res. 8:195-202.	
SPScan	A weight matrix analysis program that scans protein sequences for the presence of secretory signal peptides.	Nielson, H. et al. (1997) Protein Engineering 10:1-6; Claverie, J.M. and S. Audic (1997) CABIOS 12: 431-439.	Score=5 or greater
Motifs	A program that searches amino acid sequences for patterns that matched those defined in Prosite.	Bairoch et al. <u>supra</u> ; Wisconsin Package Program Manual, version 9, page M51-59, Genetics Computer Group, Madison, WI.	

TABLE 6

Nucleotide SEQ ID NO:	Clone ID	Fragment of SEQ ID NO	Starting Nucleotide of Fragment	Ending Nucleotide of Fragment
135	443531	443531H1	1	253
		1406807F6	152	336
		443531T6	847	355
		SBBA00451F1	396	856
136	632860	SBBA00676F1	546	865
		632860H1	13	253
		784715R3	17	666
		509590H1	455	706
137	670010	670010H1	1	263
		669971R1	1	633
		726498H1	13	263
		726498R6	13	489
138	726498	866599R3	7	660
		795064H1	86	323
		4339458H1	4	284
		937605R3	86	505
139	795064	2381151F6	592	1057
		1466346F6	857	1241
		924925H1	111	412
		3268330H1	2	239
140	924925	759120R3	111	629
		1907958F6	1	478
		023569F1	1122	470
		167282F1	1216	543
141	962390	1309211F1	911	1224

TABLE 6 (cont.)

Nucleotide SEQ ID NO:	Clone ID	Fragment of SEQ ID NO	Starting Nucleotide of Fragment	Ending Nucleotide of Fragment
142	1259405	1259405H1	46	277
		2472425H1	331	354
		774303R1	190	743
		1520779F1	418	1001
		1693833F6	914	1467
143	1297384	1831858T6.comp	1336	1742
		1527737T6.comp	1386	1829
		1297384H1	402	641
		1269310F6	1	492
		1457367F1	792	1380
144	1299627	415587R1	1358	1712
		SANA02967F1	1143	614
		1299627H1	1	250
		1359140F6	1004	1573
		1349224F1	1330	1731
145	1306026	SBAA01431F1	46	397
		SBAA02909F1	868	262
		SBAA01156F1	901	1266
		1306026H1	1	223
		1464088R6	302	829
146	1316219	SBAA02496F1	92	568
		SBAA04305F1	366	883
		1316219H1	246	491
		2458603F6	1	402
		2504756T6	980	380
147	1329031	1329031H1	1	264
		1329031T6	505	1
		1329031F6	1	523



TABLE 6 (cont.)

Nucleotide SEQ ID NO:	Clone ID	Fragment of SEQ ID NO	Starting Nucleotide of Fragment	Ending Nucleotide of Fragment
148	1483050	1483050H1	722	931
		855049H1	1	267
		077017F1	1069	679
		1483050F6	722	1215
		1480024T6	2063	1315
149	1514160	1483050T6	2068	1535
		759486R1	1762	2089
		1514160H1	1640	1838
		1866765T7	2383	2210
		782676R1	1652	1875
150	1603403	008055X4	1090	1804
		008055X5	1316	1952
		1866765F6	2209	2391
		SAOA03127F1	2129	1703
		1603403H1	7	224
151	1652303	372910F1	420	44
		733299R7	219	420
		1652303H1	4	256
		1671806H1	1	224
		1341743T1	2069	1900
151	1652303	3803812H1	389	697
		1878546F6	747	1344
		1428640F1	1081	1664
		2058609R6	1715	2098
		1331621F1	1780	2096
151	1652303	1306331T1	1897	2098

TABLE 6 (cont.)

Nucleotide SEQ ID NO:	Clone ID	Fragment of SEQ ID NO	Starting Nucleotide of Fragment	Ending Nucleotide of Fragment
152	1693358	1693358H1	41	125
		2498265H1	1	252
		1867125F6	205	373
		1693358I6	1094	416
153	1707711	2245848R6	737	1103
		1707711H1	408	626
		1484609T1	2165	1855
		1707711F6	408	987
		1267959F1	1721	2182
		1484609F1	1855	2178
		SAJA00930F1	544	1132
		SAJA01300R1	1675	1212
		SAJA00999R1	1675	1142
		1738735H1	7	236
154	1738735	SAJA00944R1	393	5
		SAJA00137F1	913	685
		SAJA03629F1	435	42
		1749147H1	1	276
155	1749147	1749147F6	47	457
155		1749147T6	479	1
156	1817722	1817722H1	1	268
		2011085H1	344	545
157	1831290	1831290H1	10	257
		3473958H1	70	242
		1972268F6	163	617
		1301277F1	413	852
		1521574F1	1024	1602
		1561690T6	1729	1058
		891461R1	1261	1738

TABLE 6 (cont.)

Nucleotide SEQ ID NO:	Clone ID	Fragment of SEQ ID NO	Starting Nucleotide of Fragment	Ending Nucleotide of Fragment
158	1831477	1831477H1	59	337
		1582867H1	1	199
		1336769T1	1986	1639
		1933092H1	525	789
		1519909F1	841	1296
		1220946H1	1061	1318
159	1841607	809556T1	1983	1687
		1217559T1	2002	1445
		1309225F1	1747	2001
		1841607H1	13	192
		SBHA03588F1	13	172
		1852391H1	98	367
160	1852391	734140H1	1	225
		1852391F6	98	542
		1854555H1	1	265
		2511711H1	37	58
		782453R1	223	712
		1854555F6	1	346
161	1854555	1840675T6	1046	860
		2109736H1	938	1054
		1855755H1	17	224
		3040236H1	1	179
		1283207F1	306	816
		833763T1	1148	835
162	1855755	1920926R6	854	1161
		1861434H1	13	253
		1861434T6	872	261
		SARA01525F1	426	808
		SARA02548F1	587	889

TABLE 6 (cont.)

Nucleotide SEQ ID NO:	Clone ID	Fragment of SEQ ID NO	Starting Nucleotide of Fragment	Ending Nucleotide of Fragment
164	1872334	1872334H1	1	229
		1872334F6	1	424
		SBCA03684F1	358	425
165	1877230	1877230H1	1405	1677
		2519841H1	1	251
		1877230T6	1903	1405
		1254693F1	335	716
		077020R1	682	1414
		1232336F1	906	1507
		1004952R6	1451	1904
		SARA01879F1	1545	1921
		SARA02654F1	1545	1923
		1877885H1	68	323
166	1877885	508020F1	499	51
		2751126R6	219	516
		SARA02571F1	407	499
		1889269H1	757	1020
167	1889269	1915551H1	1	191
		629493X12	481	865
		1441289F1	693	865
		1215274X34F1	1106	1631
		1818447F6	1307	1540
		1208463R1	1372	1493
168	1890243	1890243H1	9	268
		SARA01884F1	521	168
		SATA00046F1	1057	851
		SARA03294F1	1329	910
		SARA02790F1	1138	1535

TABLE 6 (cont.)

Nucleotide SEQ ID NO:	Clone ID	Fragment of SEQ ID NO	Starting Nucleotide of Fragment	Ending Nucleotide of Fragment
169	1900433	1900433H1 SATA00396F1 SATA02742F1	1 409 1	242 124 294
170	1909441	1909441H1 1398811F1 3039939H1 3324740H1 1442131F6 2254056H1 2199453T6 1698531H1	786 1 607 685 787 1423 1955 1968	1048 550 876 944 1232 1522 1351 1796
171	1932226	1932226H1 2320569H1 1932226F6 2469455T6 2469455F6 1907140F6 SATA02592F1	294 1 294 1475 1034 1158 857	510 266 685 1071 1492 1482 518
172	1932647	1932647H1 1492745T1 1492745H1 SASA02355F1 SASA00117F1 SASA00192F1	17 1582 1418 386 250 515	246 1418 1599 19 569 816
173	2124245	2124245H1 1235393F1 1402264F6 1303990F1 1402264T6	45 495 323 682 1613	190 895 925 1240 950

TABLE 6 (cont.)

Nucleotide SEQ ID NO:	Clone ID	Fragment of SEQ ID NO	Starting Nucleotide of Fragment	Ending Nucleotide of Fragment
174	2132626	2132626H1	406	651
		1723432T6	1299	746
		2132626R6	406	904
		1736723T6	1292	857
175	2280639	1504738F1	868	1320
		2280639H1	28	303
176	2292356	1377560F6	261	777
		2292356H1	717	968
		4086827H1	1	275
		1754442F6	232	577
		3571126H1	497	808
177	2349310	1601305F6	808	1464
		2349310H1	1	236
		2349310T6	682	2
178	2373227	2373227H1	298	524
		3316444H1	801	1053
		302685R6	1141	1496
		SASA02181F1	577	1
		SASA01923F1	963	466
179	2457682	SASA03516F1	1102	1249
		2457682H1	1	226
180	2480426	2457682F6	1	554
		2480426H1	1	213
		2480426F6	1	501

TABLE 6 (cont.)

Nucleotide SEQ ID NO:	Clone ID	Fragment of SEQ ID NO	Starting Nucleotide of Fragment	Ending Nucleotide of Fragment
181	2503743	2503743H1	6	222
		1853909H1	1	272
		1517619F1	172	830
		1467896F6	540	1112
		490031F1	1647	1068
182	2537684	1208654R1	1382	1633
		880544R1	1450	1648
		2537684H1	434	682
		2005493H1	1	194
		730969H1	307	547
183	2593853	916487H1	723	989
		996135R1	997	1598
		1920738R6	1306	1692
		1957710F6	1472	1692
		2593853H1	1	252
184	2622354	807497H1	2	217
		914020R6	284	740
		889992R1	416	729
		2622354H1	3	266
		2623992H1	1	246
185	2641377	1556510F6	81	258
		2641377H1	126	369
		4341415H2	10	345
		SBCA07049F3	126	599

TABLE 6 (cont.)

Nucleotide SEQ ID NO:	Clone ID	Fragment of SEQ ID NO	Starting Nucleotide of Fragment	Ending Nucleotide of Fragment
186	2674857	2674857H1	139	393
		1872373H1	1	270
		470512R6	1486	1502
		1728547H1	1285	1508
		3013651F6	1423	1987
187	2758485	SBCA01366F1	819	385
		SBCA00694F1	973	1198
188	2763296	2758485H1	20	267
		3097533H1	1	158
		1578959F6	291	771
189	2779436	2763296H1	63	301
		3486025F6	1	130
		SBD A07002F3	63	687
190	2808528	2779436H1	1	233
		2779436F6	1	577
		SBD A07009F3	1	608
191	2809230	2808528H1	25	335
		2611513F6	2	489
		SBD A07021T3	1058	443
192	2816821	2809230H1	409	630
		2213849H1	1	133
		711706R6	396	691
		958323R1	407	800
		030732F1	1366	623
192	2816821	2816821H1	210	501
		3746964H1	1	307
		2816821F6	210	682
		948722T6	959	527



TABLE 6 (cont.)

Nucleotide SEQ ID NO:	Clone ID	Fragment of SEQ ID NO	Starting Nucleotide of Fragment	Ending Nucleotide of Fragment
193	2817268	2817268H1	42	282
		3591308H1	13	264
		419522R1	179	808
		2073028F6	446	924
194	2923165	1308781F6	869	1112
		2923165H1	8	295
		2011630H1	18	238
		1457250F1	268	856
195	2949822	754668R1	327	878
		1406510F6	558	901
		2949822H1	1	280
		SBDA07078F3	1	606
196	2992192	2992192H1	25	321
		2534324H2	1	240
		2815255T6	690	219
		1551107T6	893	471
197	2992458	1551107R6	471	690
		2992458H1	48	362
		2618951H1	1	247
		1479252F1	163	610
		1879054H1	563	840
		1879054F6	563	1096
		2215240H1	951	1202
		1535968T1	1729	1173

TABLE 6 (cont.)

Nucleotide SEQ ID NO:	Clone ID	Fragment of SEQ ID NO	Starting Nucleotide of Fragment	Ending Nucleotide of Fragment
198	3044710	3044710H1	652	952
		3741773H1	1	283
		859906X42C1	94	192
		1534347F1	90	268
		1421122F1	830	1392
		1303865F1	1033	1487
		1704452F6	1432	1934
		1251642F1	2006	1544
		1781694R6	1894	2017
		3120415H1	72	363
199	3120415	1360123T1	523	141
		1375015H1	380	526

Claims

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What is claimed is:

1. A substantially purified polypeptide comprising an amino acid sequence selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:7, SEQ ID NO:8, SEQ ID NO:9, SEQ ID NO:10, SEQ ID NO:11, SEQ ID NO:12, SEQ ID NO:13, SEQ ID NO:14, SEQ ID NO:15, SEQ ID NO:16, SEQ ID NO:17, SEQ ID NO:18, SEQ ID NO:19, SEQ ID NO:20, SEQ ID NO:21, SEQ ID NO:22, SEQ ID NO:23, SEQ ID NO:24, SEQ ID NO:25, SEQ ID NO:26, SEQ ID NO:27, SEQ ID NO:28, SEQ ID NO:29, SEQ ID NO:30, SEQ ID NO:31, SEQ ID NO:32, SEQ ID NO:33, SEQ ID NO:34, SEQ ID NO:35, SEQ ID NO:36, SEQ ID NO:37, SEQ ID NO:38, SEQ ID NO:39, SEQ ID NO:40, SEQ ID NO:41, SEQ ID NO:42, SEQ ID NO:43, SEQ ID NO:44, SEQ ID NO:45, SEQ ID NO:46, SEQ ID NO:47, SEQ ID NO:48, SEQ ID NO:49, SEQ ID NO:50, SEQ ID NO:51, SEQ ID NO:52, SEQ ID NO:53, SEQ ID NO:54, SEQ ID NO:55, SEQ ID NO:56, SEQ ID NO:57, SEQ ID NO:58, SEQ ID NO:59, SEQ ID NO:60, SEQ ID NO:61, SEQ ID NO:62, SEQ ID NO:63, SEQ ID NO:64, SEQ ID NO:65, SEQ ID NO:66, SEQ ID NO:67, SEQ ID NO:68, SEQ ID NO:69, SEQ ID NO:70, SEQ ID NO:71, SEQ ID NO:72, SEQ ID NO:73, SEQ ID NO:74, SEQ ID NO:75, SEQ ID NO:76, SEQ ID NO:77, SEQ ID NO:78, SEQ ID NO:79, SEQ ID NO:80, SEQ ID NO:81, SEQ ID NO:82, SEQ ID NO:83, SEQ ID NO:84, SEQ ID NO:85, SEQ ID NO:86, SEQ ID NO:87, SEQ ID NO:88, SEQ ID NO:89, SEQ ID NO:90, SEQ ID NO:91, SEQ ID NO:92, SEQ ID NO:93, SEQ ID NO:94, SEQ ID NO:95, SEQ ID NO:96, SEQ ID NO:97, SEQ ID NO:98, SEQ ID NO:99, SEQ ID NO:100, SEQ ID NO:101, SEQ ID NO:102, SEQ ID NO:103, SEQ ID NO:104, SEQ ID NO:105, SEQ ID NO:106, SEQ ID NO:107, SEQ ID NO:108, SEQ ID NO:109, SEQ ID NO:110, SEQ ID NO:111, SEQ ID NO:112, SEQ ID NO:113, SEQ ID NO:114, SEQ ID NO:115, SEQ ID NO:116, SEQ ID NO:117, SEQ ID NO:118, SEQ ID NO:119, SEQ ID NO:120, SEQ ID NO:121, SEQ ID NO:122, SEQ ID NO:123, SEQ ID NO:124, SEQ ID NO:125, SEQ ID NO:126, SEQ ID NO:127, SEQ ID NO:128, SEQ ID NO:129, SEQ ID NO:130, SEQ ID NO:131, SEQ ID NO:132, SEQ ID NO:133, SEQ ID NO:134 (SEQ ID NO:1-134), and fragments thereof.

2. A substantially purified variant having at least 90% amino acid sequence identity to the amino acid sequence of claim 1.

4. An isolated and purified polynucleotide variant having at least 90% polynucleotide sequence identity to the polynucleotide of claim 3.

6. An isolated and purified polynucleotide having a sequence which is complementary to the polynucleotide of claim 3.

(a) hybridizing the polynucleotide of claim 6 to at least one nucleic acid sample, thereby forming a hybridization complex; and

8. The method of claim 7 further comprising amplifying the polynucleotide prior to hybridization.

9. An isolated and purified polynucleotide comprising a polynucleotide sequence selected from the group consisting of SEQ ID NO:135, SEQ ID NO:136, SEQ ID NO:137, SEQ ID NO:138, SEQ ID NO:139, SEQ ID NO:140, SEQ ID NO:141, SEQ ID NO:142, SEQ ID NO:143, SEQ ID NO:144, SEQ ID NO:145, SEQ ID NO:146, SEQ ID NO:147, SEQ ID NO:148, SEQ ID NO:149, SEQ ID NO:150, SEQ ID NO:151, SEQ ID NO:152, SEQ ID NO:153, SEQ ID NO:154, SEQ ID NO:155, SEQ ID NO:156, SEQ ID NO:157, SEQ ID NO:158, SEQ ID NO:159, SEQ ID NO:160, SEQ ID NO:161, SEQ ID NO:162, SEQ ID NO:163, SEQ ID NO:164, SEQ ID NO:165, SEQ ID NO:166, SEQ ID NO:167, SEQ ID NO:168, SEQ ID NO:169, SEQ ID NO:170, SEQ ID NO:171, SEQ ID NO:172, SEQ ID NO:173, SEQ ID NO:174, SEQ ID NO:175, SEQ ID NO:176, SEQ ID NO:177, SEQ ID NO:178, SEQ ID NO:179, SEQ ID NO:180, SEQ ID NO:181, SEQ ID NO:182, SEQ ID NO:183, SEQ ID NO:184, SEQ ID NO:185, SEQ ID NO:186, SEQ ID NO:187, SEQ ID NO:188, SEQ ID NO:189, SEQ ID NO:190, SEQ ID NO:191, SEQ ID NO:192, SEQ ID NO:193, SEQ ID NO:194, SEQ ID NO:195, SEQ ID NO:196, SEQ ID NO:197, SEQ ID NO:198, SEQ ID NO:199, SEQ ID NO:200, SEQ ID NO:201, SEQ

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ID NO:262, SEQ ID NO:263, SEQ ID NO:264, SEQ ID NO:265, SEQ ID NO:266, SEQ  
ID NO:267, SEQ ID NO:268 (SEQ ID NO:135-268), and fragments thereof.

25 10. An isolated and purified polynucleotide variant having at least 90%  
polynucleotide sequence identity to the polynucleotide of claim 9.

11. An isolated and purified polynucleotide having a sequence which is  
complementary to the polynucleotide of claim 9.

30 12. An expression vector comprising at least a fragment of the polynucleotide  
20 of claim 3.

13. A host cell comprising the expression vector of claim 12.

35 14. A method for producing a polypeptide, the method comprising the steps of:

a) culturing the host cell of claim 13 under conditions suitable for the  
expression of the polypeptide; and

25 b) recovering the polypeptide from the host cell culture.

40 15. A pharmaceutical composition comprising the polypeptide of claim 1 in  
conjunction with a suitable pharmaceutical carrier.

16. A purified antibody which specifically binds to the polypeptide of claim 1.

45 17. A purified agonist of the polypeptide of claim 1.

30 18. A purified antagonist of the polypeptide of claim 1.

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19. A method for treating or preventing a disorder associated with decreased expression or activity of HSPP, the method comprising administering to a subject in need of such treatment an effective amount of the pharmaceutical composition of claim 15.

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20. A method for treating or preventing a disorder associated with increased expression or activity of HSPP, the method comprising administering to a subject in need of such treatment an effective amount of the antagonist of claim 18.

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## SEQUENCE LISTING

<110> INCYTE PHARMACEUTICALS, INC.  
 LAL, Preeti  
 TANG, Y. Tom  
 GORGONE, Gina A.  
 CORLEY, Neil C.  
 GUEGLER, Karl J.  
 BAUGHN, Mariah R.  
 AKERBLOM, Ingrid E.  
 AU-YOUNG, Janice  
 YUE, Henry  
 PATTERSON, Chandra  
 REDDY, Roopa  
 HILLMAN, Jennifer L.  
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 Trp Leu Glu Pro Arg Gln Leu Arg Trp Ser Trp Thr Glu Pro Pro  
 35 40 45  
 Phe Thr Leu Leu Asp Ser Leu Gly Leu Arg Ala Ala Gln Asp Ser  
 50 55 60  
 Cys Ser Phe Thr Thr Leu Val Pro Leu Thr Leu Asp Ser Ser Phe  
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 Phe Arg Cys Arg Val Ser Val Ala Arg Glu His Leu Pro Ser Arg  
 35 40 45  
 Gly Ser Leu Leu Arg Gly Pro Arg Pro Arg Ile Pro Val Leu Val  
 50 55 60  
 Ser Cys Gln Pro Val Lys Gly His Gly Thr Leu Gly Glu Ser Pro  
 65 70 75  
 Met Pro Phe Lys Arg Val Phe Cys Gln Asp Gly Asn Val Arg Ser  
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 His Gly Arg Gln Ala Arg Ala Cys Glu Asn Leu Arg Asn Gln Thr  
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 Arg Val Ala Thr Lys Val Glu Pro Gln Lys Gly Arg Ser Thr Glu  
 65 70 75  
 Ile Cys Cys Leu Ala Val Val Pro Leu Asn Glu Val Val Gln Ser  
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 35 40 45  
 Ile Val Phe Gly Gly Gln Lys Lys Ala Thr Phe Arg Tyr His Phe  
 50 55 60  
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 Tyr Leu Tyr Gly Val Thr Gln Pro Lys His Leu Ser Ala Ser Met  
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 50 55 60  
 Leu Ala Ile Val Pro Asn Val Arg Ile Ser Trp Arg Arg Gly His  
 65 70 75  
 Phe His Gly Gln Ser Phe Tyr Ser Thr Arg Pro Pro Ser Ile His  
 80 85 90  
 Lys Asp Tyr Val Asn Arg Leu Phe Leu Asn Trp Thr Glu Gly Gln  
 95 100 105  
 Glu Ser Gly Phe Leu Arg Ile Ser Asn Leu Arg Lys Glu Asp Gln  
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 Ser Val Tyr Phe Cys Arg Val Glu Leu Asp Thr Arg Arg Ser Gly  
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Thr Ile Ala Gly Leu Arg Val Thr Glu Ser Lys Gly His Ser Glu
      170      175      180
Ser Trp His Leu Ser Leu Asp Thr Ala Ile Arg Val Ala Leu Ala
      185      190      195
Val Ala Val Leu Lys Thr Val Ile Leu Gly Leu Leu Cys Leu Leu
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Cys Pro Pro Tyr Lys Glu Asn Ser Gly His Ile Tyr Asn Lys Asn
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Ile Ser Gln Lys Asp Cys Asp Cys Leu His Val Val Glu Pro Met
      65      70      75
Pro Val Arg Gly Pro Asp Val Glu Ala Tyr Cys Leu Arg Cys Glu
      80      85      90
Cys Lys Tyr Glu Glu Arg Ser Ser Val Thr Ile Lys Val Thr Ile
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Ile Ile Tyr Leu Ser Ile Leu Gly Leu Leu Leu Tyr Met Val
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Tyr Leu Thr Leu Val Glu Pro Ile Leu Lys Arg Arg Leu Phe Gly
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His Ala Gln Leu Ile Gln Ser Asp Asp Asp Ile Gly Asp His Gln
      140      145      150
Pro Phe Ala Asn Ala His Asp Val Leu Ala Arg Ser Arg Ser Arg
      155      160      165
Ala Asn Val Leu Asn Lys Val Glu Tyr Ala Gln Gln Arg Trp Lys
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35 40 45  
Tyr Cys Cys Ser Tyr Tyr Ala Tyr Ile Gly Asn Ile Leu Ser Gly  
50 55 60  
Thr Ala Ile Ala Gly Ile Val Phe Gly Ile Val Phe Ile Met Gly  
65 70 75  
Val Ile Ala Gly Ile Ala Ile Cys Ile Cys Met Cys Met Lys Asn  
80 85 90  
His Arg Ala Thr Arg Val Gly Ile Leu Arg Thr Thr His Ile Asn  
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Thr Val Ser Ser Tyr Pro Gly Pro Pro Pro Tyr Gly His Asp His  
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Ser Val Pro Ser Gly Glu Pro Gly Arg Glu Lys Lys Ser Asn Ser  
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Pro Lys His Val Tyr Ser Ile Ala Ser Lys Gly Ser Lys Phe Lys  
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Glu Leu Val Thr His Gly Asp Ala Ser Thr Glu Asn Asp Val Leu  
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Gly Met Asp Thr Phe Ile Arg Val Leu Gln Lys Leu Asn Ser Ile
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Leu Thr Gln Pro Trp Arg Leu His Val Asn Met Gly Thr Thr Leu
 65          70          75
His Arg Val Thr Thr Ile Ser Met Ala Arg Cys Thr Leu Thr Leu
 80          85          90
Leu Lys Thr Met Leu Thr Glu Leu Leu Arg Gly Gly Ser Phe Glu
 95          100          105
Phe Lys Asp Met Arg Val Pro Ser Ala Leu Val Thr Leu His Met
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Leu Leu Cys Ser Ile Pro Leu Ser Gly Arg Leu Asp Ser Asp Glu
 125          130          135
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Gln Gly Val Asn Glu Lys Leu Thr Ile Ser Glu Glu Thr Leu Ala
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Asn Asn Thr Trp Ser Leu Met Leu Lys Glu Val Leu Ser Ser Ile
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Leu Lys Val Pro Glu Gly Phe Phe Ser Gly Leu Ile Leu Leu Ser
 185          190          195
Glu Leu Leu Pro Leu Pro Leu Pro Met Gln Thr Thr Gln Val Ser
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Ala Lys Leu Gln Pro Arg Ala Leu Ala Gly Trp Leu Arg Pro Glu
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Phe Asn Ala Pro Phe Asp Val Gly Ile Lys Leu Ser Gly Val Gln
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 Glu Lys Thr Tyr Asn Asp Ala Leu Phe Arg Tyr Asn Gly Thr Val  
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 Gly Leu Trp Arg Arg Cys Ile Thr Ile Pro Lys Asn Met His Trp  
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 Tyr Ser Pro Pro Glu Arg Thr Glu Ser Phe Asp Val Val Thr Lys  
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 Cys Val Ser Phe Thr Leu Thr Glu Gln Phe Met Glu Lys Phe Val  
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 Asp Pro Gly Asn His Asn Ser Gly Ile Asp Leu Leu Arg Thr Tyr  
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 Leu Trp Arg Cys Gln Phe Leu Leu Pro Phe Val Ser Leu Gly Leu  
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 245 250

<210> 15  
 <211> 171



&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;223&gt; Incyte Clone No: 1514160

&lt;400&gt; 15

```

Met Ser Leu Pro Ile Pro Trp Leu Ser Leu Pro Pro Cys Pro Ile
 1           5           10           15
Leu Gly Gln Pro Ala Gly Leu Leu Leu Trp Leu Phe Arg Pro Phe
 20           25           30
Ser Gln Cys Cys Gln Cys Pro Trp Glu Gly Arg Ala Ser Leu Arg
 35           40           45
His Pro Asn Gly Pro Ser Gly Cys Arg Glu Ala Glu Ala Trp Pro
 50           55           60
Gln Arg Ser Leu Leu Arg Gln Gln Leu Gln Gln Ala His Pro Leu
 65           70           75
Pro Thr Leu Pro Thr Pro Glu Arg Leu Pro Glu Gln Met Leu Phe
 80           85           90
Pro Ser Ser Ser Ser Lys Pro Phe Ser Leu Leu Ser Leu Thr Ile
 95           100          105
Trp Ala Arg Leu Val Gly Arg Leu Thr Asn Arg Ile Cys Pro Val
 110          115          120
Pro Pro Gly Ser Val Ala Ser Ser Met Ser Leu Gln Ala Gly Arg
 125          130          135
Cys Gly Asn Pro Val Val Leu Pro Gln Pro Met Pro Pro Gly Leu
 140          145          150
Leu Cys Met Asn Glu Cys Ser Leu Val Pro Gly Leu Gly Arg Gly
 155          160          165
Gln Val Asn Ser Arg Val
 170

```

&lt;210&gt; 16

&lt;211&gt; 78

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;223&gt; Incyte Clone No: 1603403

&lt;400&gt; 16

```

Met Gly Ser Gly Leu Pro Leu Val Leu Leu Leu Thr Leu Leu Gly
 1           5           10           15
Ser Ser His Gly Thr Gly Pro Gly Met Thr Leu Gln Leu Lys Leu
 20           25           30
Lys Glu Ser Phe Leu Thr Asn Ser Ser Tyr Glu Ser Ser Phe Leu
 35           40           45
Glu Leu Leu Glu Lys Leu Cys Leu Leu Leu His Leu Pro Ser Gly
 50           55           60
Thr Ser Val Thr Leu His His Ala Arg Ser Gln His His Val Val
 65           70           75
Cys Asn Thr

```

<210> 17  
 <211> 71  
 <212> PRT  
 <213> Homo sapiens .

<220>  
 <221> misc\_feature  
 <223> Incyte Clone No: 1652303

<400> 17  
 Met Lys Leu Leu Ser Cys Leu Leu Phe Leu Lys Ala Pro Leu Tyr  
   1                  5                  10                  15  
 Pro Thr Leu Cys Ser Lys Asp Pro Arg Ala Gly His Ser Leu Ile  
                   20                  25                  30  
 Cys Gly Gln Ala Gly Gln Ile Pro Glu Ala Gln Leu Gly Phe Ser  
                   35                  40                  45  
 Ser Asp Phe Lys Leu Cys Trp Cys Trp Asp Gln Gln Lys Ala Asn  
                   50                  55                  60  
 Val Gln Pro Thr His Arg Thr Val Arg Gly Leu  
                   65                  70

<210> 18  
 <211> 188  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <223> Incyte Clone No: 1693358

<400> 18  
 Met Val Pro Gly Ala Ala Gly Trp Cys Cys Leu Val Leu Trp Leu  
   1                  5                  10                  15  
 Pro Ala Cys Val Ala Ala His Gly Phe Arg Ile His Asp Tyr Leu  
                   20                  25                  30  
 Tyr Phe Gln Val Leu Ser Pro Gly Asp Ile Arg Tyr Ile Phe Thr  
                   35                  40                  45  
 Ala Thr Pro Ala Lys Asp Phe Gly Gly Ile Phe His Thr Arg Tyr  
                   50                  55                  60  
 Glu Gln Ile His Leu Val Pro Ala Glu Pro Pro Glu Ala Cys Gly  
                   65                  70                  75  
 Glu Leu Ser Asn Gly Phe Phe Ile Gln Asp Gln Ile Ala Leu Val  
                   80                  85                  90  
 Glu Arg Gly Gly Cys Ser Phe Leu Ser Lys Thr Arg Val Val Gln  
                   95                  100                  105  
 Glu His Gly Gly Arg Ala Val Ile Ile Ser Asp Asn Ala Val Asp  
                   110                  115                  120  
 Asn Asp Ser Phe Tyr Val Glu Met Ile Gln Asp Ser Thr Gln Arg  
                   125                  130                  135  
 Thr Ala Asp Ile Pro Ala Leu Phe Leu Leu Gly Arg Asp Gly Tyr  
                   140                  145                  150

Met Ile Arg Arg Ser Leu Glu Gln His Gly Leu Pro Trp Ala Ile  
 155 160 165  
 Ile Ser Ile Pro Val Asn Val Thr Ser Ile Pro Thr Phe Glu Leu  
 170 175 180  
 Leu Gln Pro Pro Trp Thr Phe Trp  
 185

<210> 19  
 <211> 80  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <223> Incyte Clone No: 1707711

<400> 19  
 Met Lys Ala Gln Pro Leu Glu Ala Leu Leu Leu Val Ala Leu Val  
 1 5 10 15  
 Leu Ser Phe Cys Gly Val Trp Phe Glu Asp Trp Leu Ser Lys Trp  
 20 25 30  
 Arg Phe Gln Cys Ile Phe Gln Leu Ala His Gln Pro Ala Leu Val  
 35 40 45  
 Asn Ile Gln Phe Arg Gly Thr Val Leu Gly Ser Glu Thr Phe Leu  
 50 55 60  
 Gly Ala Glu Glu Asn Ser Ala Asp Val Arg Ser Trp Gln Thr Leu  
 65 70 75  
 Ser Tyr Phe Glu Leu  
 80

<210> 20  
 <211> 80  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <223> Incyte Clone No: 1738735

<400> 20  
 Met Ile Asp Leu Trp Leu Pro Ala Leu Phe Val Leu Val Ala Leu  
 1 5 10 15  
 Glu Ser Leu Leu Leu Ser Pro Cys Pro Gly Thr Ser Ser Thr Leu  
 20 25 30  
 Thr Arg Thr Phe Phe Pro Ser Leu Val Ser Cys Val Gln Val Pro  
 35 40 45  
 Phe Ser Trp Ile Pro Cys Leu Glu Cys Phe Leu Ile Tyr Phe Leu  
 50 55 60  
 Ile Leu Ala Glu Asp Val Leu Gln Leu Phe Ser Gly Asn Ala Asn  
 65 70 75  
 Met Gln Val Asn Gln

80

<210> 21  
 <211> 84  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <223> Incyte Clone No: 1749147

<400> 21  
 Met Gln Arg Pro Phe Leu Ser Val Pro Cys Leu Leu Leu Leu Pro  
   1                  5                  10                  15  
 Ala Arg Val Val Trp Gly Cys Trp Cys Phe Leu Pro Gly Glu Asp  
                   20                  25                  30  
 Gly Gly Gly Cys Pro Thr Pro Ser Ser Gly Arg Ile Lys Leu Leu  
                   35                  40                  45  
 Gln Gln Cys Leu Leu His Pro Ser Leu Arg Ser Ile Thr Val Ser  
                   50                  55                  60  
 Arg Arg Ser Ala Gln Leu Leu Cys Arg Leu Lys Leu Gln Asn His  
                   65                  70                  75  
 Ile Pro Lys Val Pro Gly Lys Asn Val  
                   80

<210> 22  
 <211> 171  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <223> Incyte Clone No: 1817722

<400> 22  
 Met His Met Ile Leu Lys Val Leu Thr Thr Ala Leu Leu Leu Gln  
   1                  5                  10                  15  
 Ala Ala Ser Ala Leu Ala Asn Tyr Ile His Phe Ser Ser Tyr Ser  
                   20                  25                  30  
 Lys Asp Gly Ile Gly Val Pro Phe Met Gly Ser Leu Ala Glu Phe  
                   35                  40                  45  
 Phe Asp Ile Ala Ser Gln Ile Gln Met Leu Tyr Leu Leu Leu Ser  
                   50                  55                  60  
 Leu Cys Met Gly Trp Thr Ile Val Arg Met Lys Lys Ser Gln Ser  
                   65                  70                  75  
 Arg Pro Leu Gln Trp Asp Ser Thr Pro Ala Ser Thr Gly Ile Ala  
                   80                  85                  90  
 Val Phe Ile Val Met Thr Gln Ser Val Leu Leu Leu Trp Glu Gln  
                   95                  100                  105  
 Phe Glu Asp Ile Ser His His Ser Tyr His Ser His His Asn Leu  
                   110                  115                  120

Ala Gly Ile Leu Leu Ile Val Leu Arg Ile Cys Leu Ala Leu Ser  
 125 130 135  
 Leu Gly Cys Gly Leu Tyr Gln Ile Ile Thr Val Glu Arg Ser Thr  
 140 145 150  
 Leu Lys Arg Glu Phe Tyr Ile Thr Phe Ala Lys Val Trp Val Trp  
 155 160 165  
 Lys Glu Asn Gly Leu Phe  
 170

<210> 23  
 <211> 243  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc feature  
 <223> Incyte Clone No: 1831290

<400> 23  
 Met Ser Ser Gly Thr Glu Leu Leu Trp Pro Gly Ala Ala Leu Leu  
 1 5 10 15  
 Val Leu Leu Gly Val Ala Ala Ser Leu Cys Val Arg Cys Ser Arg  
 20 25 30  
 Pro Gly Ala Lys Arg Ser Glu Lys Ile Tyr Gln Gln Arg Ser Leu  
 35 40 45  
 Arg Glu Asp Gln Gln Ser Phe Thr Gly Ser Arg Thr Tyr Ser Leu  
 50 55 60  
 Val Gly Gln Ala Trp Pro Gly Pro Leu Ala Asp Met Ala Pro Thr  
 65 70 75  
 Arg Lys Asp Lys Leu Leu Gln Phe Tyr Pro Ser Leu Glu Asp Pro  
 80 85 90  
 Ala Ser Ser Arg Tyr Gln Asn Phe Ser Lys Gly Ser Arg His Gly  
 95 100 105  
 Ser Glu Glu Ala Tyr Ile Asp Pro Ile Ala Met Glu Tyr Tyr Asn  
 110 115 120  
 Trp Gly Arg Phe Ser Lys Pro Pro Glu Asp Asp Asp Ala Asn Ser  
 125 130 135  
 Tyr Glu Asn Val Leu Ile Cys Lys Gln Lys Thr Thr Glu Thr Gly  
 140 145 150  
 Ala Gln Gln Glu Gly Ile Gly Gly Leu Cys Arg Gly Asp Leu Ser  
 155 160 165  
 Leu Ser Leu Ala Leu Lys Thr Gly Pro Thr Ser Gly Leu Cys Pro  
 170 175 180  
 Ser Ala Ser Pro Glu Glu Asp Glu Glu Ser Glu Asp Tyr Gln Asn  
 185 190 195  
 Ser Ala Ser Ile His Gln Trp Arg Glu Ser Arg Lys Val Met Gly  
 200 205 210  
 Gln Leu Gln Arg Glu Ala Ser Pro Gly Pro Val Gly Ser Pro Asp  
 215 220 225  
 Glu Glu Asp Gly Glu Pro Asp Tyr Val Asn Gly Glu Val Ala Ala  
 230 235 240  
 Thr Glu Ala

<210> 24  
 <211> 311  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <223> Incyte Clone No: 1831477

<400> 24  
 Met Gly Val Pro Thr Ala Pro Glu Ala Gly Ser Trp Arg Trp Gly  
 1 5 10 15  
 Ser Leu Leu Phe Ala Leu Phe Leu Ala Ala Ser Leu Gly Pro Val  
 20 25 30  
 Ala Ala Phe Lys Val Ala Thr Pro Tyr Ser Leu Tyr Val Cys Pro  
 35 40 45  
 Glu Gly Gln Asn Val Thr Leu Thr Cys Arg Leu Leu Gly Pro Val  
 50 55 60  
 Asp Lys Gly His Asp Val Thr Phe Tyr Lys Thr Trp Tyr Arg Ser  
 65 70 75  
 Ser Arg Gly Glu Val Gln Thr Cys Ser Glu Arg Arg Pro Ile Arg  
 80 85 90  
 Asn Leu Thr Phe Gln Asp Leu His Leu His His Gly Gly His Gln  
 95 100 105  
 Ala Ala Asn Thr Ser His Asp Leu Ala Gln Arg His Gly Leu Glu  
 110 115 120  
 Ser Ala Ser Asp His His Gly Asn Phe Ser Ile Thr Met Arg Asn  
 125 130 135  
 Leu Thr Leu Leu Asp Ser Gly Leu Tyr Cys Cys Leu Val Val Glu  
 140 145 150  
 Ile Arg His His His Ser Glu His Arg Val His Gly Ala Met Glu  
 155 160 165  
 Leu Gln Val Gln Thr Gly Lys Asp Ala Pro Ser Asn Cys Val Val  
 170 175 180  
 Tyr Pro Ser Ser Ser Gln Glu Ser Glu Asn Ile Thr Ala Ala Ala  
 185 190 195  
 Leu Ala Thr Gly Ala Cys Ile Val Gly Ile Leu Cys Leu Pro Leu  
 200 205 210  
 Ile Leu Leu Leu Val Tyr Lys Gln Arg Gln Ala Ala Ser Asn Arg  
 215 220 225  
 Arg Ala Gln Glu Leu Val Arg Met Asp Ser Asn Ile Gln Gly Ile  
 230 235 240  
 Glu Asn Pro Gly Phe Glu Ala Ser Pro Pro Ala Gln Gly Ile Pro  
 245 250 255  
 Glu Ala Lys Val Arg His Pro Leu Ser Tyr Val Ala Gln Arg Gln  
 260 265 270  
 Pro Ser Glu Ser Gly Arg His Leu Leu Ser Glu Pro Ser Thr Pro  
 275 280 285  
 Leu Ser Pro Pro Gly Pro Gly Asp Val Phe Phe Pro Ser Leu Asp  
 290 295 300  
 Pro Val Pro Asp Ser Pro Asn Phe Glu Val Ile  
 305 310

<210> 25  
<211> 57  
<212> PRT  
<213> Homo sapiens

<220>  
<221> misc\_feature  
<223> Incyte Clone No: 1841607

<400> 25  
Met Ala Ser Ser Cys Phe Ser Leu Ser Phe Pro Pro Leu Ser Leu  
1 5 10 15  
Ala Gly Ser Leu Ala Leu Trp Gly His Cys Cys Val Arg Leu Gly  
20 25 30  
Cys Ser Phe Trp Ser Val Ser Ala Met Ala Gln Arg Leu Pro Ser  
35 40 45  
Gln Asn Thr Tyr Asn Pro Pro Leu Cys Trp Ala Trp  
50 55

<210> 26  
<211> 82  
<212> PRT  
<213> Homo sapiens

<220>  
<221> misc\_feature  
<223> Incyte Clone No: 1852391

<400> 26  
Met Phe Ser Leu Phe Ser Cys Leu Leu Ala Cys Leu Leu Asp Leu  
1 5 10 15  
Leu Leu Ser Arg Val Ala Asp Glu Ala Phe Tyr Lys Gln Pro Phe  
20 25 30  
Ala Asp Val Ile Gly Tyr Val Tyr Val Ala Lys Leu Ile Pro Phe  
35 40 45  
Ser Thr Ser Asp Ser Phe Tyr Phe Cys Leu Glu Leu Met Leu Leu  
50 55 60  
Leu Cys His Gln Leu Leu Cys Phe Leu Asn Tyr Phe Lys Leu Ala  
65 70 75  
Leu Trp Gly Leu Pro Lys Asn  
80

<210> 27  
<211> 115  
<212> PRT  
<213> Homo sapiens

<220>  
<221> misc\_feature  
<223> Incyte Clone No: 1854555

```

<400> 27
Met Ala Gly Thr Val Leu Gly Val Gly Ala Gly Val Phe Ile Leu
 1          5          10          15
Ala Leu Leu Trp Val Ala Val Leu Leu Leu Cys Val Leu Leu Ser
 20          25          30
Arg Ala Ser Gly Ala Ala Arg Phe Ser Val Ile Phe Leu Phe Phe
 35          40          45
Gly Ala Val Ile Ile Thr Ser Val Leu Leu Leu Phe Pro Arg Ala
 50          55          60
Gly Glu Phe Pro Ala Pro Glu Val Glu Val Lys Ile Val Asp Asp
 65          70          75
Phe Phe Ile Gly Arg Tyr Val Leu Leu Ala Phe Leu Ser Ala Ile
 80          85          90
Phe Leu Gly Gly Leu Phe Leu Val Leu Ile His Tyr Val Leu Glu
 95          100         105
Pro Ile Tyr Ala Lys Pro Leu His Ser Tyr
 110          115

```

```

<210> 28
<211> 327
<212> PRT
<213> Homo sapiens

```

```

<220>
<221> misc_feature
<223> Incyte Clone No: 1855755

```

```

<400> 28
Met Ala Glu Leu Pro Gly Pro Phe Leu Cys Gly Ala Leu Leu Gly
 1          5          10          15
Phe Leu Cys Leu Ser Gly Leu Ala Val Glu Val Lys Val Pro Thr
 20          25          30
Glu Pro Leu Ser Thr Pro Leu Gly Lys Thr Ala Glu Leu Thr Cys
 35          40          45
Thr Tyr Ser Thr Ser Val Gly Asp Ser Phe Ala Leu Glu Trp Ser
 50          55          60
Phe Val Gln Pro Gly Lys Pro Ile Ser Glu Ser His Pro Ile Leu
 65          70          75
Tyr Phe Thr Asn Gly His Leu Tyr Pro Thr Gly Ser Lys Ser Lys
 80          85          90
Arg Val Ser Leu Leu Gln Asn Pro Pro Thr Val Gly Val Ala Thr
 95          100         105
Leu Lys Leu Thr Asp Val His Pro Ser Asp Thr Gly Thr Tyr Leu
 110         115         120
Cys Gln Val Asn Asn Pro Pro Asp Phe Tyr Thr Asn Gly Leu Gly
 125         130         135
Leu Ile Asn Leu Thr Val Leu Val Pro Pro Ser Asn Pro Leu Cys
 140         145         150
Ser Gln Ser Gly Gln Thr Ser Val Gly Gly Ser Thr Ala Leu Arg
 155         160         165
Cys Ser Ser Ser Glu Gly Ala Pro Lys Pro Val Tyr Asn Trp Val
 170         175         180
Arg Leu Gly Thr Phe Pro Thr Pro Ser Pro Gly Ser Met Val Gln
 185         190         195

```



```

Asp Glu Val Ser Gly Gln Leu Ile Leu Thr Asn Leu Ser Leu Thr
      200                      205                      210
Ser Ser Gly Thr Tyr Arg Cys Val Ala Thr Asn Gln Met Gly Ser
      215                      220                      225
Ala Ser Cys Glu Leu Thr Leu Ser Val Thr Glu Pro Ser Gln Gly
      230                      235                      240
Arg Val Ala Gly Ala Leu Ile Gly Val Leu Leu Gly Val Leu Leu
      245                      250                      255
Leu Ser Val Ala Ala Phe Cys Leu Val Arg Phe Gln Lys Glu Arg
      260                      265                      270
Gly Lys Lys Pro Lys Glu Thr Tyr Gly Gly Ser Asp Leu Arg Glu
      275                      280                      285
Asp Ala Ile Ala Pro Gly Ile Ser Glu His Thr Cys Met Arg Ala
      290                      295                      300
Asp Ser Ser Lys Gly Phe Leu Glu Arg Pro Ser Ser Ala Ser Thr
      305                      310                      315
Val Thr Thr Thr Lys Ser Lys Leu Pro Met Val Val
      320                      325

```

```

<210> 29
<211> 133
<212> PRT
<213> Homo sapiens

```

```

<220>
<221> misc_feature
<223> Incyte Clone No: 1861434

```

```

<400> 29
Met Arg Met Ser Leu Ala Gln Arg Val Leu Leu Thr Trp Leu Phe
      1                      5                      10                      15
Thr Leu Leu Phe Leu Ile Met Leu Val Leu Lys Leu Asp Glu Lys
      20                      25                      30
Ala Pro Trp Asn Trp Phe Leu Ile Phe Ile Pro Val Trp Ile Phe
      35                      40                      45
Asp Thr Ile Leu Leu Val Leu Leu Ile Val Lys Met Ala Gly Arg
      50                      55                      60
Cys Lys Ser Gly Phe Asp Pro Arg His Gly Ser His Asn Ile Lys
      65                      70                      75
Lys Lys Ala Trp Tyr Leu Ile Ala Met Leu Leu Lys Leu Ala Phe
      80                      85                      90
Cys Leu Ala Leu Cys Ala Lys Leu Glu Gln Phe Thr Thr Met Asn
      95                      100                     105
Leu Ser Tyr Val Phe Ile Pro Leu Trp Ala Leu Leu Ala Gly Ala
      110                     115                     120
Leu Thr Glu Leu Gly Tyr Asn Val Phe Phe Val Arg Asp
      125                     130

```

```

<210> 30
<211> 129
<212> PRT

```

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;223&gt; Incyte Clone No: 1872334

&lt;400&gt; 30

```

Met Gly Leu Thr Leu Leu Leu Leu Leu Leu Gly Leu Glu Gly
 1           5           10           15
Gln Gly Ile Val Gly Ser Leu Pro Glu Val Leu Gln Ala Pro Val
 20           25           30
Gly Ser Ser Ile Leu Val Gln Cys His Tyr Arg Leu Gln Asp Val
 35           40           45
Lys Ala Gln Lys Val Trp Cys Arg Phe Leu Pro Glu Gly Cys Gln
 50           55           60
Pro Leu Val Ser Ser Ala Val Asp Arg Arg Ala Pro Ala Gly Arg
 65           70           75
Arg Thr Phe Leu Thr Asp Leu Gly Gly Gly Leu Leu Gln Val Glu
 80           85           90
Met Val Thr Leu Gln Glu Glu Asp Ala Gly Glu Tyr Gly Cys Met
 95          100          105
Val Asp Gly Ala Arg Gly Pro Gln Ile Leu His Arg Val Ser Leu
110          115          120
Asn Ile Leu Pro Pro Gly Glu Leu Ser
125

```

&lt;210&gt; 31

&lt;211&gt; 472

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;223&gt; Incyte Clone No: 1877230

&lt;400&gt; 31

```

Met Lys Phe Leu Ile Phe Ala Phe Phe Gly Gly Val His Leu Leu
 1           5           10           15
Ser Leu Cys Ser Gly Lys Ala Ile Cys Lys Asn Gly Ile Ser Lys
 20           25           30
Arg Thr Phe Glu Glu Ile Lys Glu Glu Ile Ala Ser Cys Gly Asp
 35           40           45
Val Ala Lys Ala Ile Ile Asn Leu Ala Val Tyr Gly Lys Ala Gln
 50           55           60
Asn Arg Ser Tyr Glu Arg Leu Ala Leu Leu Val Asp Thr Val Gly
 65           70           75
Pro Arg Leu Ser Gly Ser Lys Asn Leu Glu Lys Ala Ile Gln Ile
 80           85           90
Met Tyr Gln Asn Leu Gln Gln Asp Gly Leu Glu Lys Val His Leu
 95          100          105
Glu Pro Val Arg Ile Pro His Trp Glu Arg Gly Glu Glu Ser Ala
110          115          120
Val Met Leu Glu Pro Arg Ile His Lys Ile Ala Ile Leu Gly Leu
125          130          135

```

```

Gly Ser Ser Ile Gly Thr Pro Pro Glu Gly Ile Thr Ala Glu Val
140 145 150
Leu Val Val Thr Ser Phe Asp Glu Leu Gln Arg Arg Ala Ser Glu
155 160 165
Ala Arg Gly Lys Ile Val Val Tyr Asn Gln Pro Tyr Ile Asn Tyr
170 175 180
Ser Arg Thr Val Gln Tyr Arg Thr Gln Gly Ala Val Glu Ala Ala
185 190 195
Lys Val Gly Ala Leu Ala Ser Leu Ile Arg Ser Val Ala Ser Phe
200 205 210
Ser Ile Tyr Ser Pro His Thr Gly Ile Gln Glu Tyr Gln Asp Gly
215 220 225
Val Pro Lys Ile Pro Thr Ala Cys Ile Thr Val Glu Asp Ala Glu
230 235 240
Met Met Ser Arg Met Ala Ser His Gly Ile Lys Ile Val Ile Gln
245 250 255
Leu Lys Met Gly Ala Lys Thr Tyr Pro Asp Thr Asp Ser Phe Asn
260 265 270
Thr Val Ala Glu Ile Thr Gly Ser Lys Tyr Pro Glu Gln Val Val
275 280 285
Leu Val Ser Gly His Leu Asp Ser Trp Asp Val Gly Gln Gly Ala
290 295 300
Met Asp Asp Gly Gly Gly Ala Phe Ile Ser Trp Glu Ala Leu Ser
305 310 315
Leu Ile Lys Asp Leu Gly Leu Arg Pro Lys Arg Thr Leu Arg Leu
320 325 330
Val Leu Trp Thr Ala Glu Glu Gln Gly Gly Val Gly Ala Phe Gln
335 340 345
Tyr Tyr Gln Leu His Lys Val Asn Ile Ser Asn Tyr Ser Leu Val
350 355 360
Met Glu Ser Asp Ala Gly Thr Phe Leu Pro Thr Gly Leu Gln Phe
365 370 375
Thr Gly Ser Glu Lys Ala Arg Ala Ile Met Glu Glu Val Met Ser
380 385 390
Leu Leu Gln Pro Leu Asn Ile Thr Gln Val Leu Ser His Gly Glu
395 400 405
Gly Thr Asp Ile Asn Phe Trp Ile Gln Ala Gly Val Pro Gly Ala
410 415 420
Ser Leu Leu Asp Asp Leu Tyr Lys Tyr Phe Phe Phe His His Ser
425 430 435
His Gly Asp Thr Met Thr Val Met Asp Pro Lys Gln Met Asn Val
440 445 450
Ala Ala Ala Val Trp Ala Val Val Ser Tyr Val Val Ala Asp Met
455 460 465
Glu Glu Met Leu Pro Arg Ser
470

```

```

<210> 32
<211> 93
<212> PRT
<213> Homo sapiens

<220>
<221> misc_feature

```

&lt;223&gt; Incyte Clone No: 1877885

&lt;400&gt; 32

```

Met Ile His Leu Gly His Ile Leu Phe Leu Leu Leu Pro Val
 1           5           10           15
Ala Ala Ala Gln Thr Thr Pro Gly Glu Arg Ser Ser Leu Pro Ala
          20           25           30
Phe Tyr Pro Gly Thr Ser Gly Ser Cys Ser Gly Cys Gly Ser Leu
          35           40           45
Ser Leu Pro Leu Leu Ala Gly Leu Val Ala Ala Asp Ala Val Ala
          50           55           60
Ser Leu Leu Ile Val Gly Ala Val Phe Leu Cys Ala Arg Pro Arg
          65           70           75
Arg Ser Pro Ala Gln Glu Asp Gly Lys Val Tyr Ile Asn Met Pro
          80           85           90
Gly Arg Gly

```

&lt;210&gt; 33

&lt;211&gt; 92

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;223&gt; Incyte Clone No: 1889269

&lt;400&gt; 33

```

Met Asn Arg Pro Ser Ala Arg Asn Ala Leu Gly Asn Val Phe Val
 1           5           10           15
Ser Glu Leu Leu Glu Thr Leu Ala Gln Leu Arg Glu Asp Arg Gln
          20           25           30
Val Arg Val Leu Leu Phe Arg Ser Gly Val Lys Gly Val Phe Cys
          35           40           45
Ala Gly Ala Asp Leu Lys Glu Arg Glu Gln Met Ser Glu Ala Glu
          50           55           60
Val Gly Val Phe Val Gln Arg Leu Arg Gly Leu Met Asn Asp Ile
          65           70           75
Gly Glu Asp Leu Gly Val Gly Trp Arg Arg Gly Phe Gly Gly Pro
          80           85           90
Cys Arg

```

&lt;210&gt; 34

&lt;211&gt; 143

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;223&gt; Incyte Clone No: 1890243

&lt;400&gt; 34

```

Met Trp Ile Lys Gly Thr Met Lys Met Arg Gly Gly Lys Thr Ser
 1           5           10           15
Arg Ser Ala Val Leu Pro Val Ala Gln Leu Thr Leu Ile Ala Ser
 20           25           30
Cys Phe Pro Asn Ser Gln Thr Val Leu Gly Thr Glu Gly Thr Leu
 35           40           45
Asp Val Glu Ser Ser Pro Leu Ala Leu Thr Gly Leu Trp Ala
 50           55           60
Ser Pro Glu Ser Leu Ser Leu Tyr Leu Val Thr Leu Leu Cys Val
 65           70           75
Cys Pro Ala Leu Gln Ser Cys Gln Gly Gln Gln Ala Asp Val Thr
 80           85           90
Leu Ala Pro Cys Glu Ile Phe Ile Pro Gln Thr Leu Ala Cys Glu
 95          100          105
Pro Phe Pro Ser Gln Trp Arg Ala Leu Lys Gly Ala Ser Leu Glu
110          115          120
Ser Ser Ser Val Leu Trp Val Ala Pro Cys Arg Trp Pro Leu Thr
125          130          135
Leu Arg Cys Ser Arg Val His Leu
140

```

<210> 35  
 <211> 89  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <223> Incyte Clone No: 1900433

```

<400> 35
Met Glu Arg Val Thr Leu Ala Leu Leu Leu Ala Gly Leu Thr
 1           5           10           15
Ala Leu Glu Ala Asn Asp Pro Phe Ala Asn Lys Asp Asp Pro Phe
 20           25           30
Tyr Tyr Asp Trp Lys Asn Leu Gln Leu Ser Gly Leu Ile Cys Gly
 35           40           45
Gly Leu Leu Ala Ile Ala Gly Ile Ala Ala Val Leu Ser Gly Lys
 50           55           60
Cys Lys Tyr Lys Ser Ser Gln Lys Gln His Ser Pro Val Pro Glu
 65           70           75
Lys Ala Ile Pro Leu Ile Thr Pro Gly Ser Ala Thr Thr Cys
 80           85

```

<210> 36  
 <211> 560  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc\_feature

&lt;223&gt; Incyte Clone No: 1909441

&lt;400&gt; 36

Met	Ala	Lys	Lys	Lys	Leu	Thr	Glu	Met	Ile	Pro	Leu	Cys	Asn	His	
1				5					10					15	
Pro	Ala	Ser	Phe	Val	Lys	Leu	Phe	Val	Ala	Leu	Gly	Pro	Ile	Ala	
				20					25					30	
Gly	Pro	Glu	Glu	Lys	Lys	Gln	Leu	Lys	Ser	Thr	Met	Leu	Leu	Met	
				35					40					45	
Ser	Glu	Asp	Leu	Thr	Gly	Glu	Gln	Ala	Leu	Ala	Val	Leu	Gly	Ala	
				50					55					60	
Met	Gly	Asp	Met	Glu	Ser	Arg	Asn	Ser	Cys	Leu	Ile	Lys	Arg	Val	
				65					70					75	
Thr	Ser	Val	Leu	His	Lys	His	Leu	Asp	Gly	Tyr	Lys	Pro	Leu	Glu	
				80					85					90	
Leu	Leu	Lys	Ile	Thr	Gln	Glu	Leu	Thr	Phe	Leu	His	Phe	Gln	Arg	
				95					100					105	
Lys	Glu	Phe	Phe	Ala	Lys	Leu	Arg	Glu	Leu	Leu	Ser	Tyr	Leu		
				110					115					120	
Lys	Asn	Ser	Phe	Ile	Pro	Thr	Glu	Val	Ser	Val	Leu	Val	Arg	Ala	
				125					130					135	
Ile	Ser	Leu	Leu	Pro	Ser	Pro	His	Leu	Asp	Glu	Val	Gly	Ile	Ser	
				140					145					150	
Arg	Ile	Glu	Ala	Val	Leu	Pro	Gln	Cys	Asp	Leu	Asn	Asn	Leu	Ser	
				155					160					165	
Ser	Phe	Ala	Thr	Ser	Val	Leu	Arg	Trp	Ile	Gln	His	Asp	His	Met	
				170					175					180	
Tyr	Leu	Asp	Asn	Met	Thr	Ala	Lys	Gln	Leu	Lys	Leu	Leu	Gln	Lys	
				185					190					195	
Leu	Asp	His	Tyr	Gly	Arg	Gln	Arg	Leu	Gln	His	Ser	Asn	Ser	Leu	
				200					205					210	
Asp	Leu	Leu	Arg	Lys	Glu	Leu	Lys	Ser	Leu	Lys	Gly	Asn	Thr	Phe	
				215					220					225	
Pro	Glu	Ser	Leu	Leu	Glu	Glu	Met	Ile	Ala	Thr	Leu	Gln	His	Phe	
				230					235					240	
Met	Asp	Asp	Ile	Asn	Tyr	Ile	Asn	Val	Gly	Glu	Ile	Ala	Ser	Phe	
				245					250					255	
Ile	Ser	Ser	Thr	Asp	Tyr	Leu	Ser	Thr	Leu	Leu	Leu	Asp	Arg	Ile	
				260					265					270	
Ala	Ser	Val	Ala	Val	Gln	Gln	Ile	Glu	Lys	Ile	His	Pro	Phe	Thr	
				275					280					285	
Ile	Pro	Ala	Ile	Ile	Arg	Pro	Phe	Ser	Val	Leu	Asn	Tyr	Asp	Pro	
				290					295					300	
Pro	Gln	Arg	Asp	Glu	Phe	Leu	Gly	Thr	Cys	Val	Gln	His	Leu	Asn	
				305					310					315	
Ser	Tyr	Leu	Gly	Ile	Leu	Asp	Pro	Phe	Ile	Leu	Val	Phe	Leu	Gly	
				320					325					330	
Phe	Ser	Leu	Ala	Thr	Leu	Glu	Tyr	Phe	Pro	Glu	Asp	Leu	Leu	Lys	
				335					340					345	
Ala	Ile	Phe	Asn	Ile	Lys	Phe	Leu	Ala	Arg	Leu	Asp	Ser	Gln	Leu	
				350					355					360	
Glu	Ile	Leu	Ser	Pro	Ser	Arg	Ser	Ala	Arg	Val	Gln	Phe	His	Leu	
				365					370					375	
Met	Glu	Leu	Asn	Arg	Ser	Val	Cys	Leu	Glu	Cys	Pro	Glu	Phe	Gln	
				380					385					390	
Ile	Pro	Trp	Phe	His	Asp	Arg	Phe	Cys	Gln	Gln	Tyr	Asn	Lys	Gly	
				395					400					405	

```

Ile Gly Gly Met Asp Gly Thr Gln Gln Gln Ile Phe Lys Met Leu
410                               415                               420
Ala Glu Val Leu Gly Gly Ile Asn Cys Val Lys Ala Ser Val Leu
425                               430                               435
Thr Pro Tyr Tyr His Lys Val Asp Phe Glu Cys Ile Leu Asp Lys
440                               445                               450
Arg Lys Lys Pro Leu Pro Tyr Gly Ser His Asn Ile Ala Leu Gly
455                               460                               465
Gln Leu Pro Glu Met Pro Trp Glu Ser Asn Ile Glu Ile Val Gly
470                               475                               480
Ser Arg Leu Pro Pro Gly Ala Glu Arg Ile Ala Leu Glu Phe Leu
485                               490                               495
Asp Ser Lys Ala Leu Cys Arg Asn Ile Pro His Met Lys Gly Lys
500                               505                               510
Ser Ala Met Lys Lys Arg His Leu Glu Ile Leu Gly Tyr Arg Val
515                               520                               525
Ile Gln Ile Ser Gln Phe Glu Trp Asn Ser Met Ala Leu Ser Thr
530                               535                               540
Lys Asp Ala Arg Met Asp Tyr Leu Arg Glu Cys Ile Phe Gly Glu
545                               550                               555
Val Lys Ser Cys Leu
560

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<210> 37
<211> 197
<212> PRT
<213> Homo sapiens

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<220>
<221> misc_feature
<223> Incyte Clone No: 1932226

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```

<400> 37
Met Gly Val Pro Leu Gly Leu Gly Ala Ala Trp Leu Leu Ala Trp
1           5           10           15
Pro Gly Leu Ala Leu Pro Leu Val Ala Met Ala Ala Gly Gly Arg
20          25          30
Trp Val Arg Gln Gln Gly Pro Arg Val Arg Arg Gly Ile Ser Arg
35          40          45
Leu Trp Leu Arg Val Leu Leu Arg Leu Ser Pro Met Ala Phe Arg
50          55          60
Ala Leu Gln Gly Cys Gly Ala Val Gly Asp Arg Gly Leu Phe Ala
65          70          75
Leu Tyr Pro Lys Thr Asn Lys Asp Gly Phe Arg Ser Arg Leu Pro
80          85          90
Val Pro Gly Pro Arg Arg Arg Asn Pro Arg Thr Thr Gln His Pro
95          100         105
Leu Ala Leu Leu Ala Arg Val Trp Val Leu Cys Lys Gly Trp Asn
110         115         120
Trp Arg Leu Ala Arg Ala Ser Gln Gly Leu Ala Ser His Leu Pro
125         130         135
Pro Trp Ala Ile His Thr Leu Ala Ser Trp Gly Leu Leu Arg Gly
140         145         150
Glu Arg Pro Thr Arg Ile Pro Arg Leu Leu Pro Arg Ser Gln Arg

```

	155	160	165
Gln Leu Gly Pro	Pro Ala Ser Arg Gln	Pro Leu Pro Gly Thr	Leu
	170	175	180
Ala Gly Arg Arg	Ser Arg Thr Arg Gln	Ser Arg Ala Leu Pro	Pro
	185	190	195
Trp Arg			

<210> 38  
 <211> 437  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <223> Incyte Clone No: 1932647

<400> 38  
 Met Ser Ala Val Leu Leu Ala Leu Leu Gly Phe Ile Leu Pro  
 1 5 10 15  
 Leu Pro Gly Val Gln Ala Leu Leu Cys Gln Phe Gly Thr Val Gln  
 20 25 30  
 His Val Trp Lys Val Ser Asp Leu Pro Arg Gln Trp Thr Pro Lys  
 35 40 45  
 Asn Thr Ser Cys Asp Ser Gly Leu Gly Cys Gln Asp Thr Leu Met  
 50 55 60  
 Leu Ile Glu Ser Gly Pro Gln Val Ser Leu Val Leu Ser Lys Gly  
 65 70 75  
 Cys Thr Glu Ala Lys Asp Gln Glu Pro Arg Val Thr Glu His Arg  
 80 85 90  
 Met Gly Pro Gly Leu Ser Leu Ile Ser Tyr Thr Phe Val Cys Arg  
 95 100 105  
 Gln Glu Asp Phe Cys Asn Asn Leu Val Asn Ser Leu Pro Leu Trp  
 110 115 120  
 Ala Pro Gln Pro Pro Ala Asp Pro Gly Ser Leu Arg Cys Pro Val  
 125 130 135  
 Cys Leu Ser Met Glu Gly Cys Leu Glu Gly Thr Thr Glu Glu Ile  
 140 145 150  
 Cys Pro Lys Gly Thr Thr His Cys Tyr Asp Gly Leu Leu Arg Leu  
 155 160 165  
 Arg Gly Gly Gly Ile Phe Ser Asn Leu Arg Val Gln Gly Cys Met  
 170 175 180  
 Pro Gln Pro Gly Cys Asn Leu Leu Asn Gly Thr Gln Glu Ile Gly  
 185 190 195  
 Pro Val Gly Met Thr Glu Asn Cys Asn Arg Lys Asp Phe Leu Thr  
 200 205 210  
 Cys His Arg Gly Thr Thr Ile Met Thr His Gly Asn Leu Ala Gln  
 215 220 225  
 Glu Pro Thr Asp Trp Thr Thr Ser Asn Thr Glu Met Cys Glu Val  
 230 235 240  
 Gly Gln Val Cys Gln Glu Thr Leu Leu Leu Ile Asp Val Gly Leu  
 245 250 255  
 Thr Ser Thr Leu Val Gly Thr Lys Gly Cys Ser Thr Val Gly Ala  
 260 265 270  
 Gln Asn Ser Gln Lys Thr Thr Ile His Ser Ala Pro Pro Gly Val



```

                275                280                285
Leu Val Ala Ser Tyr Thr His Phe Cys Ser Ser Asp Leu Cys Asn
                290                295                300
Ser Ala Ser Ser Ser Ser Val Leu Leu Asn Ser Leu Pro Pro Gln
                305                310                315
Ala Ala Pro Val Pro Gly Asp Arg Gln Cys Pro Thr Cys Val Gln
                320                325                330
Pro Leu Gly Thr Cys Ser Ser Gly Ser Pro Arg Met Thr Cys Pro
                335                340                345
Arg Gly Ala Thr His Cys Tyr Asp Gly Tyr Ile His Leu Ser Gly
                350                355                360
Gly Gly Leu Ser Thr Lys Met Ser Ile Gln Gly Cys Val Ala Gln
                365                370                375
Pro Ser Ser Phe Leu Leu Asn His Thr Arg Gln Ile Gly Ile Phe
                380                385                390
Ser Ala Arg Glu Lys Arg Asp Val Gln Pro Pro Ala Ser Gln His
                395                400                405
Glu Gly Gly Gly Ala Glu Gly Leu Glu Ser Leu Thr Trp Gly Val
                410                415                420
Gly Leu Ala Leu Ala Pro Ala Leu Trp Trp Gly Val Val Cys Pro
                425                430                435
Ser Cys

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<210> 39
<211> 330
<212> PRT
<213> Homo sapiens

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<220>
<221> misc_feature
<223> Incyte Clone No: 2124245

```

```

<400> 39
Met Glu Gly Ala Pro Pro Gly Ser Leu Ala Leu Arg Leu Leu Leu
  1                5                10                15
Phe Val Ala Leu Pro Ala Ser Gly Trp Leu Thr Thr Gly Ala Pro
  20                25                30
Glu Pro Pro Pro Leu Ser Gly Ala Pro Gln Asp Gly Ile Arg Ile
  35                40                45
Asn Val Thr Thr Leu Lys Asp Asp Gly Asp Ile Ser Lys Gln Gln
  50                55                60
Val Val Leu Asn Ile Thr Tyr Glu Ser Gly Gln Val Tyr Val Asn
  65                70                75
Asp Leu Pro Val Asn Ser Gly Val Thr Arg Ile Ser Cys Gln Thr
  80                85                90
Leu Ile Val Lys Asn Glu Asn Leu Glu Asn Leu Glu Glu Lys Glu
  95                100               105
Tyr Phe Gly Ile Val Ser Val Arg Ile Leu Val His Glu Trp Pro
  110               115               120
Met Thr Ser Gly Ser Ser Leu Gln Leu Ile Val Ile Gln Glu Glu
  125               130               135
Val Val Glu Ile Asp Gly Lys Gln Val Gln Gln Lys Asp Val Thr
  140               145               150
Glu Ile Asp Ile Leu Val Lys Asn Arg Gly Val Leu Arg His Ser

```

```

155      160      165
Asn Tyr Thr Leu Pro Leu Glu Glu Ser Met Leu Tyr Ser Ile Ser
170      175      180
Arg Asp Ser Asp Ile Leu Phe Thr Leu Pro Asn Leu Ser Lys Lys
185      190      195
Glu Ser Val Ser Ser Leu Gln Thr Thr Ser Gln Tyr Leu Ile Arg
200      205      210
Asn Val Glu Thr Thr Val Asp Glu Asp Val Leu Pro Gly Lys Leu
215      220      225
Pro Glu Thr Pro Leu Arg Ala Glu Pro Pro Ser Ser Tyr Lys Val
230      235      240
Met Cys Gln Trp Met Glu Lys Phe Arg Lys Asp Leu Cys Arg Phe
245      250      255
Trp Ser Asn Val Phe Pro Val Phe Phe Gln Phe Leu Asn Ile Met
260      265      270
Val Val Gly Ile Thr Gly Ala Ala Val Val Ile Thr Ile Leu Lys
275      280      285
Val Phe Phe Pro Val Ser Glu Tyr Lys Gly Ile Leu Gln Leu Asp
290      295      300
Lys Val Asp Val Ile Pro Val Thr Ala Ile Asn Leu Tyr Pro Asp
305      310      315
Gly Pro Glu Lys Arg Ala Glu Asn Leu Glu Asp Lys Thr Cys Ile
320      325      330

```

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<210> 40
<211> 148
<212> PRT
<213> Homo sapiens

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```

<220>
<221> misc_feature
<223> Incyte Clone No: 2132626

```

```

<400> 40
Met Glu Thr Gly Ala Leu Arg Arg Pro Gln Leu Leu Pro Leu Leu
1      5      10      15
Leu Leu Leu Cys Gly Gly Cys Pro Arg Ala Gly Gly Cys Asn Glu
20      25      30
Thr Gly Met Leu Glu Arg Leu Pro Leu Cys Gly Lys Ala Phe Ala
35      40      45
Asp Met Met Gly Lys Val Asp Val Trp Lys Trp Cys Asn Leu Ser
50      55      60
Glu Phe Ile Val Tyr Tyr Glu Ser Phe Thr Asn Cys Thr Glu Met
65      70      75
Glu Ala Asn Val Val Gly Cys Tyr Trp Pro Asn Pro Leu Ala Gln
80      85      90
Gly Phe Ile Thr Gly Ile His Arg Gln Phe Phe Ser Asn Cys Thr
95      100      105
Val Asp Arg Val His Leu Glu Asp Pro Pro Asp Glu Val Leu Ile
110      115      120
Pro Leu Ile Val Ile Pro Val Val Leu Thr Val Ala Met Ala Gly
125      130      135
Leu Val Val Trp Arg Ser Lys Arg Thr Asp Thr Leu Leu
140      145

```

<210> 41  
<211> 188  
<212> PRT  
<213> Homo sapiens

<220>  
<221> misc\_feature  
<223> Incyte Clone No: 2280639

<400> 41  
Met Ala Pro Pro Pro Ser Pro Gln Leu Leu Leu Ala Ala  
1 5 10 15  
Leu Ala Arg Leu Leu Gly Pro Ser Glu Val Met Ala Gly Pro Ala  
20 25 30  
Glu Glu Ala Gly Ala His Cys Pro Glu Ser Leu Trp Pro Leu Pro  
35 40 45  
Pro Gln Val Ser Pro Arg Val Thr Tyr Thr Arg Val Ser Pro Gly  
50 55 60  
Gln Ala Glu Asp Val Thr Phe Leu Tyr His Pro Cys Ala His Pro  
65 70 75  
Trp Leu Lys Leu Gln Leu Ala Leu Leu Ala Tyr Ala Cys Met Ala  
80 85 90  
Asn Pro Ser Leu Thr Pro Asp Phe Ser Leu Thr Gln Asp Arg Pro  
95 100 105  
Leu Val Leu Thr Ala Trp Gly Leu Ala Leu Glu Met Ala Trp Val  
110 115 120  
Glu Pro Ala Trp Ala Ala His Trp Leu Met Arg Arg Arg Arg Arg  
125 130 135  
Lys Gln Arg Lys Lys Lys Ala Trp Ile Tyr Cys Glu Ser Leu Ser  
140 145 150  
Gly Pro Ala Pro Ser Glu Pro Thr Pro Gly Arg Gly Arg Leu Cys  
155 160 165  
Arg Arg Gly Cys Val Gln Ala Leu Ala Leu Ala Phe Ala Leu Arg  
170 175 180  
Thr Gly Gly Pro Leu Ala Gln Arg  
185

<210> 42  
<211> 222  
<212> PRT  
<213> Homo sapiens

<220>  
<221> misc\_feature  
<223> Incyte Clone No: 2292356

<400> 42  
Met Ala Ala Ala Ala Leu Thr Ser Leu Ser Thr Ser Pro Leu Leu  
1 5 10 15  
Leu Gly Ala Pro Val Ala Ala Phe Ser Pro Glu Pro Gly Leu Glu  
20 25 30

```

Pro Trp Lys Glu Ala Leu Val Arg Pro Pro Gly Ser Tyr Ser Ser
      35              40              45
Ser Ser Asn Ser Gly Asp Trp Gly Trp Asp Leu Ala Ser Asp Gln
      50              55              60
Ser Ser Pro Ser Thr Pro Ser Pro Pro Leu Pro Pro Glu Ala Ala
      65              70              75
His Phe Leu Phe Gly Glu Pro Thr Leu Arg Lys Arg Lys Ser Pro
      80              85              90
Ala Gln Val Met Phe Gln Cys Leu Trp Lys Ser Cys Gly Lys Val
      95              100             105
Leu Ser Thr Ala Ser Ala Met Gln Arg His Ile Arg Leu Val His
      110             115             120
Leu Gly Cys Gly Gly Ala Trp Gly Ala Ala Gly Pro Ala Gly Trp
      125             130             135
Leu Gly Leu Leu Gly Pro Ala Arg Pro Pro Leu Gln Leu Pro Leu
      140             145             150
Ala Gly Cys Val Ser Arg Arg Arg Gln Ala Glu Pro Glu Gln Ser
      155             160             165
Asp Gly Glu Glu Asp Phe Tyr Tyr Thr Glu Leu Asp Val Gly Val
      170             175             180
Asp Thr Leu Thr Asp Gly Leu Ser Ser Leu Thr Pro Val Phe Pro
      185             190             195
Glu Gly Phe His Ala Ser Leu Pro Ser Pro Ala Leu Lys Leu Arg
      200             205             210
Arg Leu Gly Gly Thr Arg Gln Pro Arg Gln Tyr Pro
      215             220

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<210> 43  
 <211> 111  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <223> Incyte Clone No: 2349310

```

<400> 43
Met Gly Pro Ser Ser Cys Leu Leu Leu Ile Leu Ile Pro Leu Leu
      1              5              10              15
Gln Leu Ile Asn Leu Gly Ser Thr Gln Cys Ser Leu Asp Ser Val
      20              25              30
Met Asp Lys Lys Ile Lys Asp Val Leu Asn Ser Leu Glu Tyr Ser
      35              40              45
Pro Ser Pro Ile Ser Lys Lys Leu Ser Cys Ala Ser Val Lys Ser
      50              55              60
Gln Gly Arg Pro Ser Ser Cys Pro Ala Gly Met Ala Val Thr Gly
      65              70              75
Cys Ala Cys Gly Tyr Gly Cys Gly Ser Trp Asp Val Gln Leu Glu
      80              85              90
Thr Thr Cys His Cys Gln Cys Ser Val Val Asp Trp Thr Thr Ala
      95              100             105
Arg Cys Cys His Leu Thr
      110

```

<210> 44  
 <211> 341  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <223> Incyte Clone No: 2373227

<400> 44  
 Met Val Pro Ala Ala Gly Ala Leu Leu Trp Val Leu Leu Leu Asn  
 1 5 10 15  
 Leu Gly Pro Arg Ala Ala Gly Ala Gln Gly Leu Thr Gln Thr Pro  
 20 25 30  
 Thr Glu Met Gln Arg Val Ser Leu Arg Phe Gly Gly Pro Met Thr  
 35 40 45  
 Arg Ser Tyr Arg Ser Thr Ala Arg Thr Gly Leu Pro Arg Lys Thr  
 50 55 60  
 Arg Ile Ile Leu Glu Asp Glu Asn Asp Ala Met Ala Asp Ala Asp  
 65 70 75  
 Arg Leu Ala Gly Pro Ala Ala Ala Glu Leu Leu Ala Ala Thr Val  
 80 85 90  
 Ser Thr Gly Phe Ser Arg Ser Ser Ala Ile Asn Glu Glu Asp Gly  
 95 100 105  
 Ser Ser Glu Glu Gly Val Val Ile Asn Ala Gly Lys Asp Ser Thr  
 110 115 120  
 Ser Arg Glu Leu Pro Ser Ala Thr Pro Asn Thr Ala Gly Ser Ser  
 125 130 135  
 Ser Thr Arg Phe Ile Ala Asn Ser Gln Glu Pro Glu Ile Arg Leu  
 140 145 150  
 Thr Ser Ser Leu Pro Arg Ser Pro Gly Arg Ser Thr Glu Asp Leu  
 155 160 165  
 Pro Gly Ser Gln Ala Thr Leu Ser Gln Trp Ser Thr Pro Gly Ser  
 170 175 180  
 Thr Pro Ser Arg Trp Pro Ser Pro Ser Pro Thr Ala Met Pro Ser  
 185 190 195  
 Pro Glu Asp Leu Arg Leu Val Leu Met Pro Trp Gly Pro Trp His  
 200 205 210  
 Cys His Cys Lys Ser Gly Thr Met Ser Arg Ser Arg Ser Gly Lys  
 215 220 225  
 Leu His Gly Leu Ser Gly Arg Leu Arg Val Gly Ala Leu Ser Gln  
 230 235 240  
 Leu Arg Thr Glu His Lys Pro Cys Thr Tyr Gln Gln Cys Pro Cys  
 245 250 255  
 Asn Arg Leu Arg Glu Glu Cys Pro Leu Asp Thr Ser Leu Cys Thr  
 260 265 270  
 Asp Thr Asn Cys Ala Ser Gln Ser Thr Thr Ser Thr Arg Thr Thr  
 275 280 285  
 Thr Thr Pro Phe Pro Thr Ile His Leu Arg Ser Ser Pro Ser Leu  
 290 295 300  
 Pro Pro Ala Ser Pro Cys Pro Ala Leu Ala Phe Trp Lys Arg Val  
 305 310 315  
 Arg Ile Gly Leu Glu Asp Ile Trp Asn Ser Leu Ser Ser Val Phe  
 320 325 330  
 Thr Glu Met Gln Pro Ile Asp Arg Asn Gln Arg

335

340

<210> 45  
<211> 148  
<212> PRT  
<213> Homo sapiens

<220>  
<221> misc\_feature  
<223> Incyte Clone No: 2457682

<400> 45  
Met Ala Gly Leu Ala Ala Arg Leu Val Leu Leu Ala Gly Ala Ala  
1 5 10 15  
Ala Leu Ala Ser Gly Ser Gln Gly Asp Arg Glu Pro Val Tyr Arg  
20 25 30  
Asp Cys Val Leu Gln Cys Glu Glu Gln Asn Cys Ser Gly Gly Ala  
35 40 45  
Leu Asn His Phe Arg Ser Arg Gln Pro Ile Tyr Met Ser Leu Ala  
50 55 60  
Gly Trp Thr Cys Arg Asp Asp Cys Lys Tyr Glu Cys Met Trp Val  
65 70 75  
Thr Val Gly Leu Tyr Leu Gln Glu Gly His Lys Val Pro Gln Phe  
80 85 90  
His Gly Lys Trp Pro Phe Ser Arg Phe Leu Phe Phe Gln Glu Pro  
95 100 105  
Ala Ser Ala Val Ala Ser Phe Leu Asn Gly Leu Ala Ser Leu Val  
110 115 120  
Met Leu Cys Arg Tyr Arg Thr Phe Val Pro Ala Ser Ser Pro Met  
125 130 135  
Tyr His Thr Cys Val Ala Phe Ala Trp Leu Ser Gly Arg  
140 145

<210> 46  
<211> 87  
<212> PRT  
<213> Homo sapiens

<220>  
<221> misc\_feature  
<223> Incyte Clone No: 2480426

<400> 46  
Met Arg Pro Leu Leu Val Leu Leu Leu Leu Gly Leu Ala Ala Gly  
1 5 10 15  
Ser Pro Pro Leu Asp Asp Asn Lys Ile Pro Ser Leu Cys Pro Gly  
20 25 30  
Leu Pro Gly Pro Arg Gly Asp Pro Gly Pro Arg Gly Glu Ala Gly  
35 40 45  
Pro Ala Gly Pro Thr Gly Leu Ala Gly Glu Cys Ser Val Pro Pro  
50 55 60

Arg Ser Ala Phe Ser Ala Lys Arg Ser Glu Ile Arg Val Pro Pro  
 65 70 75  
 Leu Ser Asp Ala Pro Leu Pro Ser Thr Ala Cys Trp  
 80 85

<210> 47  
 <211> 383  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <223> Incyte Clone No: 2503743

<400> 47  
 Met Ala Gly Ile Pro Gly Leu Leu Phe Leu Leu Phe Phe Leu Leu  
 1 5 10 15  
 Cys Ala Val Gly Gln Val Ser Pro Tyr Ser Ala Pro Trp Lys Pro  
 20 25 30  
 Thr Trp Pro Ala Tyr Arg Leu Pro Val Val Leu Pro Gln Ser Thr  
 35 40 45  
 Leu Asn Leu Ala Lys Pro Asp Phe Gly Ala Glu Ala Lys Leu Glu  
 50 55 60  
 Val Ser Ser Ser Cys Gly Pro Gln Cys His Lys Gly Thr Pro Leu  
 65 70 75  
 Pro Thr Tyr Glu Glu Ala Lys Gln Tyr Leu Ser Tyr Glu Thr Leu  
 80 85 90  
 Tyr Ala Asn Gly Ser Arg Thr Glu Thr Gln Val Gly Ile Tyr Ile  
 95 100 105  
 Leu Ser Ser Ser Gly Asp Gly Ala Gln His Arg Asp Ser Gly Ser  
 110 115 120  
 Ser Gly Lys Ser Arg Arg Lys Arg Gln Ile Tyr Gly Tyr Asp Ser  
 125 130 135  
 Arg Phe Ser Ile Phe Gly Lys Asp Phe Leu Leu Asn Tyr Pro Phe  
 140 145 150  
 Ser Thr Ser Val Lys Leu Ser Thr Gly Cys Thr Gly Thr Leu Val  
 155 160 165  
 Ala Glu Lys His Val Leu Thr Ala Ala His Cys Ile His Asp Gly  
 170 175 180  
 Lys Thr Tyr Val Lys Gly Thr Gln Lys Leu Arg Val Gly Phe Leu  
 185 190 195  
 Lys Pro Lys Phe Lys Asp Gly Gly Arg Gly Ala Asn Asp Ser Thr  
 200 205 210  
 Ser Ala Met Pro Glu Gln Met Lys Phe Gln Trp Ile Arg Val Lys  
 215 220 225  
 Arg Thr His Val Pro Lys Gly Trp Ile Lys Gly Asn Ala Asn Asp  
 230 235 240  
 Ile Gly Met Asp Tyr Asp Tyr Ala Leu Leu Glu Leu Lys Lys Pro  
 245 250 255  
 His Lys Arg Lys Phe Met Lys Ile Gly Val Ser Pro Pro Ala Lys  
 260 265 270  
 Gln Leu Pro Gly Gly Arg Ile His Phe Ser Gly Tyr Asp Asn Asp  
 275 280 285  
 Arg Pro Gly Asn Leu Val Tyr Arg Phe Cys Asp Val Lys Asp Glu

	290		295		300
Thr Tyr Asp Leu	Leu Tyr Gln Gln Cys	Asp Ala Gln Pro Gly	Ala		
	305		310		315
Ser Gly Ser Gly	Val Tyr Val Arg Met	Trp Lys Arg Gln Gln	Gln		
	320		325		330
Lys Trp Glu Arg	Lys Ile Ile Gly Ile	Phe Ser Gly His Gln	Trp		
	335		340		345
Val Asp Met Asn	Gly Ser Pro Gln Asp	Phe Asn Val Ala Val	Arg		
	350		355		360
Ile Thr Pro Leu	Lys Tyr Ala Gln Ile	Cys Tyr Trp Ile Lys	Gly		
	365		370		375
Asn Tyr Leu Asp	Cys Arg Glu Gly				
	380				

&lt;210&gt; 48

&lt;211&gt; 109

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;223&gt; Incyte Clone No: 2537684

&lt;400&gt; 48

Met Leu Leu Pro	Ala Leu Cys Ala	Trp Leu Leu Trp	Val Pro Trp
1	5	10	15
Cys Leu Leu Val	Ala Gly Ser Gly	Arg Ser Gly	Gly Glu Leu Cys
	20	25	30
Cys Ser Ser Tyr	Gly Val Ser Val	Ile Ser Val	Trp Ser Lys Cys
	35	40	45
Ser Val Cys Arg	Cys Leu Met Gly	Ser Val Pro	Arg Ile Phe Phe
	50	55	60
Ala Phe Tyr Pro	Ile Ala Trp Leu	Pro Leu Pro	Gly Ser Gln Gly
	65	70	75
Cys Trp Ser Arg	Ser Trp Glu Trp	Pro Leu Val	Glu Pro Ala Ser
	80	85	90
Cys Leu Val Cys	Leu Cys Phe Thr	Phe Gly Val	Leu Ser Gly Val
	95	100	105
Val Ala Val Lys			

&lt;210&gt; 49

&lt;211&gt; 185

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;223&gt; Incyte Clone No: 2593853

&lt;400&gt; 49

Met Lys Phe Thr Ile Val Phe Ala Gly Leu Leu Gly Val Phe Leu



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1           5           10           15
Ala Pro Ala Leu Ala Asn Tyr Asn Ile Asn Val Asn Asp Asp Asn
20           25           30
Asn Asn Ala Gly Ser Gly Gln Gln Ser Val Ser Val Asn Asn Glu
35           40           45
His Asn Val Ala Asn Val Asp Asn Asn Asn Gly Trp Asp Ser Trp
50           55           60
Asn Ser Ile Trp Asp Tyr Gly Asn Gly Phe Ala Ala Thr Arg Leu
65           70           75
Phe Gln Lys Lys Thr Cys Ile Val His Lys Met Asn Lys Glu Val
80           85           90
Met Pro Ser Ile Gln Ser Leu Asp Ala Leu Val Lys Glu Lys Lys
95           100          105
Leu Gln Gly Lys Gly Pro Gly Gly Pro Pro Pro Lys Gly Leu Met
110          115          120
Tyr Ser Val Asn Pro Asn Lys Val Asp Asp Leu Ser Lys Phe Gly
125          130          135
Lys Asn Ile Ala Asn Met Cys Arg Gly Ile Pro Thr Tyr Met Ala
140          145          150
Glu Glu Met Gln Glu Ala Ser Leu Phe Phe Tyr Ser Gly Thr Cys
155          160          165
Tyr Thr Thr Ser Val Leu Trp Ile Val Asp Ile Ser Phe Cys Gly
170          175          180
Asp Thr Val Glu Asn
185

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<210> 50
<211> 110
<212> PRT
<213> Homo sapiens

<220>
<221> misc_feature
<223> Incyte Clone No: 2622354

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<400> 50
Met Ala Pro Arg Gly Cys Ile Val Ala Val Phe Ala Ile Phe Cys
1           5           10           15
Ile Ser Arg Leu Leu Cys Ser His Gly Ala Pro Val Ala Pro Met
20           25           30
Thr Pro Tyr Leu Met Leu Cys Gln Pro His Lys Arg Cys Gly Asp
35           40           45
Lys Phe Tyr Asp Pro Leu Gln His Cys Cys Tyr Asp Asp Ala Val
50           55           60
Val Pro Leu Ala Arg Thr Gln Thr Cys Gly Asn Cys Thr Phe Arg
65           70           75
Val Cys Phe Glu Gln Cys Cys Pro Trp Thr Phe Met Val Lys Leu
80           85           90
Ile Asn Gln Asn Cys Asp Ser Ala Arg Thr Ser Asp Asp Arg Leu
95           100          105
Cys Arg Ser Val Ser
110

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<210> 51  
 <211> 126  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <223> Incyte Clone No: 2641377

<400> 51  
 Met Trp Leu Gly Ser Trp Leu Thr Ser Leu Leu Leu Ser Pro Tyr  
 1 5 10 15  
 Gly Ser Gly Trp Glu Lys Val Pro Cys Cys Val Thr Gly His Leu  
 20 25 30  
 Arg Ser Cys Ser Cys Cys Leu Leu Gly Leu Ala Gly Val Gln Ser  
 35 40 45  
 Asp His Phe Ser Glu Gly Phe Phe Ser Glu Tyr Ser Ser Asp Val  
 50 55 60  
 Leu Pro Trp Gly Arg Arg Ser Phe Leu Pro Gln Gly Asp Ala Ser  
 65 70 75  
 Leu Leu Ala Cys Glu Cys Phe Leu His Leu Gln Val Val Trp Gly  
 80 85 90  
 Gln Phe Cys Leu Leu Glu Ala Trp Ala Gly Phe Thr Glu Gly Ser  
 95 100 105  
 Met Pro Ala Pro Ser Cys Arg Val His Phe Trp Cys Arg Val Asn  
 110 115 120  
 Thr Cys Ala Phe Met Ser  
 125

<210> 52  
 <211> 488  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <223> Incyte Clone No: 2674857

<400> 52  
 Met Ala Gly Lys Gly Ser Ser Gly Arg Arg Pro Leu Leu Leu Gly  
 1 5 10 15  
 Leu Leu Val Ala Val Ala Thr Val His Leu Val Ile Cys Pro Tyr  
 20 25 30  
 Thr Lys Val Glu Glu Ser Phe Asn Leu Gln Ala Thr His Asp Leu  
 35 40 45  
 Leu Tyr His Trp Gln Asp Leu Glu Gln Tyr Asp His Leu Glu Phe  
 50 55 60  
 Pro Gly Val Val Pro Arg Thr Phe Leu Gly Pro Val Val Ile Ala  
 65 70 75  
 Val Phe Ser Ser Pro Ala Val Tyr Val Leu Ser Leu Leu Glu Met  
 80 85 90  
 Ser Lys Phe Tyr Ser Gln Leu Ile Val Arg Gly Val Leu Gly Leu  
 95 100 105

Gly Val Ile Phe Gly Leu Trp Thr Leu Gln Lys Glu Val Arg Arg	110	115	120
His Phe Gly Ala Met Val Ala Thr Met Phe Cys Trp Val Thr Ala	125	130	135
Met Gln Phe His Leu Met Phe Tyr Cys Thr Arg Thr Leu Pro Asn	140	145	150
Val Leu Ala Leu Pro Val Val Leu Leu Ala Leu Ala Ala Trp Leu	155	160	165
Arg His Glu Trp Ala Arg Phe Ile Trp Leu Ser Ala Phe Ala Ile	170	175	180
Ile Val Phe Arg Val Glu Leu Cys Leu Phe Leu Gly Leu Leu Leu	185	190	195
Leu Leu Ala Leu Gly Asn Arg Lys Val Ser Val Val Arg Ala Leu	200	205	210
Arg His Ala Val Pro Ala Gly Ile Leu Cys Leu Gly Leu Thr Val	215	220	225
Ala Val Asp Ser Tyr Phe Trp Arg Gln Leu Thr Trp Pro Glu Gly	230	235	240
Lys Val Leu Trp Tyr Asn Thr Val Leu Asn Lys Ser Ser Asn Trp	245	250	255
Gly Thr Ser Pro Leu Leu Trp Tyr Phe Tyr Ser Ala Leu Pro Arg	260	265	270
Gly Leu Gly Cys Ser Leu Leu Phe Ile Pro Leu Gly Leu Val Asp	275	280	285
Arg Arg Thr His Ala Pro Thr Val Leu Ala Leu Gly Phe Met Ala	290	295	300
Leu Tyr Ser Leu Leu Pro His Lys Glu Leu Arg Phe Ile Ile Tyr	305	310	315
Ala Phe Pro Met Leu Asn Ile Thr Ala Ala Arg Gly Cys Ser Tyr	320	325	330
Leu Leu Asn Asn Tyr Lys Lys Ser Trp Leu Tyr Lys Ala Gly Ser	335	340	345
Leu Leu Val Ile Gly His Leu Val Val Asn Ala Ala Tyr Ser Ala	350	355	360
Thr Ala Leu Tyr Val Ser His Phe Asn Tyr Pro Gly Gly Val Ala	365	370	375
Met Gln Arg Leu His Gln Leu Val Pro Pro Gln Thr Asp Val Leu	380	385	390
Leu His Ile Asp Val Ala Ala Ala Gln Thr Gly Val Ser Arg Phe	395	400	405
Leu Gln Val Asn Ser Ala Trp Arg Tyr Asp Lys Arg Glu Asp Val	410	415	420
Gln Pro Gly Thr Gly Met Leu Ala Tyr Thr His Ile Leu Met Glu	425	430	435
Ala Ala Pro Gly Leu Leu Ala Leu Tyr Arg Asp Thr His Arg Val	440	445	450
Leu Ala Ser Val Val Gly Thr Thr Gly Val Ser Leu Asn Leu Thr	455	460	465
Gln Leu Pro Pro Phe Asn Val His Leu Gln Thr Lys Leu Val Leu	470	475	480
Leu Glu Arg Leu Pro Arg Pro Ser	485		

<211> 197  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <223> Incyte Clone No: 2758485

<400> 53  
 Met Ser Pro Arg Arg Thr Leu Pro Arg Pro Leu Ser Leu Cys Leu  
 1 5 10 15  
 Ser Leu Cys Leu Cys Leu Cys Leu Ala Ala Ala Leu Gly Ser Ala  
 20 25 30  
 Gln Ser Gly Ser Cys Arg Asp Lys Lys Asn Cys Lys Val Val Phe  
 35 40 45  
 Ser Gln Gln Glu Leu Arg Lys Arg Leu Thr Pro Leu Gln Tyr His  
 50 55 60  
 Val Thr Gln Glu Lys Gly Thr Glu Ser Ala Phe Glu Gly Glu Tyr  
 65 70 75  
 Thr His His Lys Asp Pro Gly Ile Tyr Lys Cys Val Val Cys Gly  
 80 85 90  
 Thr Pro Leu Phe Lys Ser Glu Thr Lys Phe Asp Ser Gly Ser Gly  
 95 100 105  
 Trp Pro Ser Phe His Asp Val Ile Asn Ser Glu Ala Ile Thr Phe  
 110 115 120  
 Thr Asp Asp Phe Ser Tyr Gly Met His Arg Val Glu Thr Ser Cys  
 125 130 135  
 Ser Gln Cys Gly Ala His Leu Gly His Ile Phe Asp Asp Gly Pro  
 140 145 150  
 Arg Pro Thr Gly Lys Arg Tyr Cys Ile Asn Ser Ala Ala Leu Ser  
 155 160 165  
 Phe Thr Pro Ala Asp Ser Ser Gly Thr Ala Glu Gly Gly Ser Gly  
 170 175 180  
 Val Ala Ser Pro Ala Gln Ala Asp Lys Ala Asp Ser Glu Ser Asn  
 185 190 195  
 Gly Glu

<210> 54  
 <211> 84  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <223> Incyte Clone No: 2763296

<400> 54  
 Met Thr Pro Gln Ser Leu Leu Gln Thr Thr Leu Phe Leu Leu Ser  
 1 5 10 15  
 Leu Leu Phe Leu Val Gln Gly Ala His Gly Arg Gly His Arg Glu  
 20 25 30  
 Asp Phe Arg Phe Cys Ser Gln Arg Asn Gln Thr His Arg Ser Ser  
 35 40 45  
 Leu His Tyr Tyr Trp Ser Met Arg Leu Gln Ala Arg Gly Gly Pro

50 55 60  
 Ser Pro Leu Lys Ser Asn Ser Asp Ser Ala Arg Leu Pro Ile Ser  
 65 70 75  
 Ser Gly Ser Thr Ser Ser Ser Arg Ile  
 80

<210> 55  
 <211> 97  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <223> Incyte Clone No: 2779436

<400> 55  
 Met Gln Leu Gly Thr Gly Leu Leu Leu Ala Ala Val Leu Ser Leu  
 1 5 10 15  
 Gln Leu Ala Ala Ala Glu Ala Ile Trp Cys His Gln Cys Thr Gly  
 20 25 30  
 Phe Gly Gly Cys Ser His Gly Ser Arg Cys Leu Arg Asp Ser Thr  
 35 40 45  
 His Cys Val Thr Thr Ala Thr Arg Val Leu Ser Asn Thr Glu Asp  
 50 55 60  
 Leu Pro Leu Val Thr Lys Met Cys His Ile Gly Cys Pro Asp Ile  
 65 70 75  
 Pro Ser Leu Gly Leu Gly Pro Tyr Val Ser Ile Ala Cys Cys Gln  
 80 85 90  
 Thr Ser Leu Cys Asn His Asp  
 95

<210> 56  
 <211> 140  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <223> Incyte Clone No: 2808528

<400> 56  
 Met Ala Ala Ser Leu Gly Gln Val Leu Ala Leu Val Leu Val Ala  
 1 5 10 15  
 Ala Leu Trp Gly Gly Thr Gln Pro Leu Leu Lys Arg Ala Ser Ala  
 20 25 30  
 Gly Leu Gln Arg Val His Glu Pro Thr Trp Ala Gln Gln Leu Leu  
 35 40 45  
 Gln Glu Met Lys Thr Leu Phe Leu Asn Thr Glu Tyr Leu Met Pro  
 50 55 60  
 Phe Leu Leu Asn Gln Cys Gly Ser Leu Leu Tyr Tyr Leu Thr Leu  
 65 70 75

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Ala Ser Thr Asp Leu Thr Leu Ala Val Pro Ile Cys Asn Ser Leu
      80                      85                      90
Ala Ile Ile Phe Thr Leu Ile Val Gly Lys Ala Leu Gly Glu Asp
      95                      100                     105
Ile Gly Gly Lys Arg Ala Val Ala Gly Met Val Leu Thr Val Ile
      110                     115                     120
Gly Ile Ser Leu Cys Ile Thr Ser Ser Val Ser Lys Thr Gln Gly
      125                     130                     135
Gln Gln Ser Thr Leu
      140

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<210> 57  
 <211> 285  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <223> Incyte Clone No: 2809230

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<400> 57
Met Glu Val Pro Pro Pro Ala Pro Arg Ser Phe Leu Cys Arg Ala
  1          5          10          15
Leu Cys Leu Phe Pro Arg Val Phe Ala Ala Glu Ala Val Thr Ala
  20         25         30
Asp Ser Glu Val Leu Glu Glu Arg Gln Lys Arg Leu Pro Tyr Val
  35         40         45
Pro Glu Pro Tyr Tyr Pro Glu Ser Gly Trp Asp Arg Leu Arg Glu
  50         55         60
Leu Phe Gly Lys Asp Glu Gln Gln Arg Ile Ser Lys Asp Leu Ala
  65         70         75
Asn Ile Cys Lys Thr Ala Ala Thr Ala Gly Ile Ile Gly Trp Val
  80         85         90
Tyr Gly Gly Ile Pro Ala Phe Ile His Ala Lys Gln Gln Tyr Ile
  95        100        105
Glu Gln Ser Gln Ala Glu Ile Tyr His Asn Arg Phe Asp Ala Val
  110       115       120
Gln Ser Ala His Arg Ala Ala Thr Arg Gly Phe Ile Arg Tyr Gly
  125       130       135
Trp Arg Trp Gly Trp Arg Thr Ala Val Phe Val Thr Ile Phe Asn
  140       145       150
Thr Val Asn Thr Ser Leu Asn Val Tyr Arg Asn Lys Asp Ala Leu
  155       160       165
Ser His Phe Val Ile Ala Gly Ala Val Thr Gly Ser Leu Phe Arg
  170       175       180
Ile Asn Val Gly Leu Arg Gly Leu Val Ala Gly Gly Ile Ile Gly
  185       190       195
Ala Leu Leu Gly Thr Pro Val Gly Gly Leu Leu Met Ala Phe Gln
  200       205       210
Lys Tyr Ser Gly Glu Thr Val Gln Glu Arg Lys Gln Lys Asp Arg
  215       220       225
Lys Ala Leu His Glu Leu Lys Leu Glu Glu Trp Lys Gly Arg Leu
  230       235       240
Gln Val Thr Glu His Leu Pro Glu Lys Ile Glu Ser Ser Leu Gln

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	245	250	255
Glu Asp Glu Pro	Glu Asn Asp Ala Lys	Lys Ile Glu Ala Leu	Leu
	260	265	270
Asn Leu Pro Arg	Asn Pro Ser Val Ile	Asp Lys Gln Asp Lys	Asp
	275	280	285

<210> 58  
 <211> 262  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <223> Incyte Clone No: 2816821

<400> 58

Met Thr Gln Pro Val	Pro Arg Leu Ser Val	Pro Ala Ala Leu Ala	
1	5	10	15
Leu Gly Ser Ala Ala	Leu Gly Ala Ala Phe	Ala Thr Gly Leu Phe	
	20	25	30
Leu Gly Arg Arg Cys	Pro Pro Trp Arg Gly	Arg Arg Glu Gln Cys	
	35	40	45
Leu Leu Pro Pro Glu	Asp Ser Arg Leu Trp	Gln Tyr Leu Leu Ser	
	50	55	60
Arg Ser Met Arg Glu	His Pro Ala Leu Arg	Ser Leu Arg Leu Leu	
	65	70	75
Thr Leu Glu Gln Pro	Gln Gly Asp Ser Met	Met Thr Cys Glu Gln	
	80	85	90
Ala Gln Leu Leu Ala	Asn Leu Ala Arg Leu	Ile Gln Ala Lys Lys	
	95	100	105
Ala Leu Asp Leu Gly	Thr Phe Thr Gly Tyr	Ser Ala Leu Ala Leu	
	110	115	120
Ala Leu Ala Leu Pro	Ala Asp Gly Arg Val	Val Thr Cys Glu Val	
	125	130	135
Asp Ala Gln Pro Pro	Glu Leu Gly Arg Pro	Leu Trp Arg Gln Ala	
	140	145	150
Glu Ala Glu His Lys	Ile Asp Leu Arg Leu	Lys Pro Ala Leu Glu	
	155	160	165
Thr Leu Asp Glu Leu	Leu Ala Ala Gly Glu	Ala Gly Thr Phe Asp	
	170	175	180
Val Ala Val Val Asp	Ala Asp Lys Glu Asn	Cys Ser Ala Tyr Tyr	
	185	190	195
Glu Arg Cys Leu Gln	Leu Leu Arg Pro Gly	Gly Ile Leu Ala Val	
	200	205	210
Leu Arg Val Leu Trp	Arg Gly Lys Val Leu	Gln Pro Pro Lys Gly	
	215	220	225
Asp Val Ala Ala Glu	Cys Val Arg Asn Leu	Asn Glu Arg Ile Arg	
	230	235	240
Arg Asp Val Arg Val	Tyr Ile Ser Leu Leu	Pro Leu Gly Asp Gly	
	245	250	255
Leu Thr Leu Ala Phe	Lys Ile		
	260		

<210> 59  
 <211> 189  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <223> Incyte Clone No: 2817268

<400> 59  
 Met Ala Leu Leu Ser Arg Pro Ala Leu Thr Leu Leu Leu Leu  
 1 5 10 15  
 Met Ala Ala Val Val Arg Cys Gln Glu Gln Ala Gln Thr Thr Asp  
 20 25 30  
 Trp Arg Ala Thr Leu Lys Thr Ile Arg Asn Gly Val His Lys Ile  
 35 40 45  
 Asp Thr Tyr Leu Asn Ala Ala Leu Asp Leu Leu Gly Gly Glu Asp  
 50 55 60  
 Gly Leu Cys Gln Tyr Lys Cys Ser Asp Gly Ser Lys Pro Phe Pro  
 65 70 75  
 Arg Tyr Gly Tyr Lys Pro Ser Pro Pro Asn Gly Cys Gly Ser Pro  
 80 85 90  
 Leu Phe Gly Val His Leu Asn Ile Gly Ile Pro Ser Leu Thr Lys  
 95 100 105  
 Cys Cys Asn Gln His Asp Arg Cys Tyr Glu Thr Cys Gly Lys Ser  
 110 115 120  
 Lys Asn Asp Cys Asp Glu Glu Phe Gln Tyr Cys Leu Ser Lys Ile  
 125 130 135  
 Cys Arg Asp Val Gln Lys Thr Leu Gly Leu Thr Gln His Val Gln  
 140 145 150  
 Ala Cys Glu Thr Thr Val Glu Leu Leu Phe Asp Ser Val Ile His  
 155 160 165  
 Leu Gly Cys Lys Pro Tyr Leu Asp Ser Gln Arg Ala Ala Cys Arg  
 170 175 180  
 Cys His Tyr Glu Glu Lys Thr Asp Leu  
 185

<210> 60  
 <211> 257  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <223> Incyte Clone No: 2923165

<400> 60  
 Met Thr Ala Ala Val Phe Phe Gly Cys Ala Phe Ile Ala Phe Gly  
 1 5 10 15  
 Pro Ala Leu Ala Leu Tyr Val Phe Thr Ile Ala Thr Glu Pro Leu  
 20 25 30  
 Arg Ile Ile Phe Leu Ile Ala Gly Ala Phe Phe Trp Leu Val Ser  
 35 40 45



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Leu Leu Ile Ser Ser Leu Val Trp Phe Met Ala Arg Val Ile Ile
      50                      55                      60
Asp Asn Lys Asp Gly Pro Thr Gln Lys Tyr Leu Leu Ile Phe Gly
      65                      70                      75
Ala Phe Val Ser Val Tyr Ile Gln Glu Met Phe Arg Phe Ala Tyr
      80                      85                      90
Tyr Lys Leu Leu Lys Lys Ala Ser Glu Gly Leu Lys Ser Ile Asn
      95                      100                     105
Pro Gly Glu Thr Ala Pro Ser Met Arg Leu Leu Ala Tyr Val Ser
     110                     115                     120
Gly Leu Gly Phe Gly Ile Met Ser Gly Val Phe Ser Phe Val Asn
     125                     130                     135
Thr Leu Ser Asp Ser Leu Gly Pro Gly Thr Val Gly Ile His Gly
     140                     145                     150
Asp Ser Pro Gln Phe Phe Leu Tyr Ser Ala Phe Met Thr Leu Val
     155                     160                     165
Ile Ile Leu Leu His Val Phe Trp Gly Ile Val Phe Phe Asp Gly
     170                     175                     180
Cys Glu Lys Lys Lys Trp Gly Ile Leu Leu Ile Val Leu Leu Thr
     185                     190                     195
His Leu Leu Val Ser Ala Gln Thr Phe Ile Ser Ser Tyr Tyr Gly
     200                     205                     210
Ile Asn Leu Ala Ser Ala Phe Ile Ile Leu Val Leu Met Gly Thr
     215                     220                     225
Trp Ala Phe Leu Ala Ala Gly Gly Ser Cys Arg Ser Leu Lys Leu
     230                     235                     240
Cys Leu Leu Cys Gln Asp Lys Asn Phe Leu Leu Tyr Asn Gln Arg
     245                     250                     255
Ser Arg

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&lt;210&gt; 61

&lt;211&gt; 82

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;223&gt; Incyte Clone No: 2949822

&lt;400&gt; 61

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Met Pro Phe Ser Trp Met Val Ile Ile Leu Gly Phe Leu Cys Gly
      1                      5                      10                     15
Leu Ser Gly Gln Leu Gln Ile Met Asn Thr Leu Ser Ser Leu Pro
      20                     25                     30
Ile Val Leu Leu Val Ser Ser Ser Cys Leu Ile Leu Ala Arg Met
      35                     40                     45
Ser Tyr Ser Ile Leu Thr Ser Ser Tyr Gly Gly Gly Val Phe Ile
      50                     55                     60
Leu Leu Asp Leu Lys Arg Asn Thr Ser Lys Val Ser Pro Leu Met
      65                     70                     75
Met Met Phe Ala Ile Gly His
      80

```

<210> 62  
 <211> 202  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <223> Incyte Clone No: 2992192

<400> 62  
 Met Ala Ala Pro Trp Arg Arg Trp Pro Thr Gly Leu Leu Ala Val  
 1 5 10 15  
 Leu Arg Pro Leu Leu Thr Cys Arg Pro Leu Gln Gly Thr Thr Leu  
 20 25 30  
 Gln Arg Asp Val Leu Leu Phe Glu His Asp Arg Gly Arg Phe Phe  
 35 40 45  
 Thr Ile Leu Gly Leu Phe Cys Ala Gly Gln Gly Val Phe Trp Ala  
 50 55 60  
 Ser Met Ala Val Ala Ala Val Ser Arg Pro Pro Val Pro Val Gln  
 65 70 75  
 Pro Leu Asp Ala Glu Val Pro Asn Arg Gly Pro Phe Asp Leu Arg  
 80 85 90  
 Ser Ala Leu Trp Arg Tyr Gly Leu Ala Val Gly Cys Gly Ala Ile  
 95 100 105  
 Gly Ala Leu Val Leu Gly Ala Gly Leu Leu Phe Ser Leu Arg Ser  
 110 115 120  
 Val Arg Ser Val Val Leu Arg Ala Gly Gly Gln Gln Val Thr Leu  
 125 130 135  
 Thr Thr His Ala Pro Phe Gly Leu Gly Ala His Phe Thr Val Pro  
 140 145 150  
 Leu Lys Gln Val Ser Cys Met Ala His Arg Gly Glu Val Pro Ala  
 155 160 165  
 Met Leu Pro Leu Lys Val Lys Gly Arg Arg Phe Tyr Phe Leu Leu  
 170 175 180  
 Asp Lys Thr Gly His Phe Pro Asn Thr Lys Leu Phe Asp Asn Thr  
 185 190 195  
 Val Gly Ala Tyr Arg Ser Leu  
 200

<210> 63  
 <211> 450  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <223> Incyte Clone No: 2992458

<400> 63  
 Met Leu Val Thr Ala Tyr Leu Ala Phe Val Gly Leu Leu Ala Ser  
 1 5 10 15  
 Cys Leu Gly Leu Glu Leu Ser Arg Cys Arg Ala Lys Pro Pro Gly  
 20 25 30

44/167

<210> 64  
 <211> 322  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <223> Incyte Clone No: 3044710

<400> 64  
 Met Ala Arg Cys Phe Ser Leu Val Leu Leu Leu Thr Ser Ile Trp  
 1 5 10 15  
 Thr Thr Arg Leu Leu Val Gln Gly Ser Leu Arg Ala Glu Glu Leu  
 20 25 30  
 Ser Ile Gln Val Ser Cys Arg Ile Met Gly Ile Thr Leu Val Ser  
 35 40 45  
 Lys Lys Ala Asn Gln Gln Leu Asn Phe Thr Glu Ala Lys Glu Ala  
 50 55 60  
 Cys Arg Leu Leu Gly Leu Ser Leu Ala Gly Lys Asp Gln Val Glu  
 65 70 75  
 Thr Ala Leu Lys Ala Ser Phe Glu Thr Cys Ser Tyr Gly Trp Val  
 80 85 90  
 Gly Asp Gly Phe Val Val Ile Ser Arg Ile Ser Pro Asn Pro Lys  
 95 100 105  
 Cys Gly Lys Asn Gly Val Gly Val Leu Ile Trp Lys Val Pro Val  
 110 115 120  
 Ser Arg Gln Phe Ala Ala Tyr Cys Tyr Asn Ser Ser Asp Thr Trp  
 125 130 135  
 Thr Asn Ser Cys Ile Pro Glu Ile Ile Thr Thr Lys Asp Pro Ile  
 140 145 150  
 Phe Asn Thr Gln Thr Ala Thr Gln Thr Thr Glu Phe Ile Val Ser  
 155 160 165  
 Asp Ser Thr Tyr Ser Val Ala Ser Pro Tyr Ser Thr Ile Pro Ala  
 170 175 180  
 Pro Thr Thr Thr Pro Pro Ala Pro Ala Ser Thr Ser Ile Pro Arg  
 185 190 195  
 Arg Lys Lys Leu Ile Cys Val Thr Glu Val Phe Met Glu Thr Ser  
 200 205 210  
 Thr Met Ser Thr Glu Thr Glu Pro Phe Val Glu Asn Lys Ala Ala  
 215 220 225  
 Phe Lys Asn Glu Ala Ala Gly Phe Gly Gly Val Pro Thr Ala Leu  
 230 235 240  
 Leu Val Leu Ala Leu Leu Phe Phe Gly Ala Ala Ala Gly Leu Gly  
 245 250 255  
 Phe Cys Tyr Val Lys Arg Tyr Val Lys Ala Phe Pro Phe Thr Asn  
 260 265 270  
 Lys Asn Gln Gln Lys Glu Met Ile Glu Thr Lys Val Val Lys Glu  
 275 280 285  
 Glu Lys Ala Asn Asp Ser Asn Pro Asn Glu Glu Ser Lys Lys Thr  
 290 295 300  
 Asp Lys Asn Pro Glu Glu Ser Lys Ser Pro Ser Lys Thr Thr Val  
 305 310 315  
 Arg Cys Leu Glu Ala Glu Val  
 320

<210> 65  
 <211> 104  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <223> Incyte Clone No: 3120415

<400> 65  
 Met Lys Leu Ala Ala Leu Leu Gly Leu Cys Val Ala Leu Ser Cys  
     1                  5                  10                  15  
 Ser Ser Ala Ala Ala Phe Leu Val Gly Ser Ala Lys Pro Val Ala  
                   20                  25                  30  
 Gln Pro Val Ala Ala Leu Glu Ser Ala Ala Glu Ala Gly Ala Gly  
                   35                  40                  45  
 Thr Leu Ala Asn Pro Leu Gly Thr Leu Asn Pro Leu Lys Leu Leu  
                   50                  55                  60  
 Leu Ser Ser Leu Gly Ile Pro Val Asn His Leu Ile Glu Gly Ser  
                   65                  70                  75  
 Gln Lys Cys Val Ala Glu Leu Gly Pro Gln Ala Val Gly Ala Val  
                   80                  85                  90  
 Lys Ala Leu Lys Ala Leu Leu Gly Ala Leu Thr Val Phe Gly  
                   95                  100

<210> 66  
 <211> 93  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <223> Incyte Clone No: 126758

<400> 66  
 Met Lys Leu Val Thr Ile Phe Leu Leu Val Thr Ile Ser Leu Cys  
     1                  5                  10                  15  
 Ser Tyr Ser Ala Thr Ala Phe Leu Ile Asn Lys Val Pro Leu Pro  
                   20                  25                  30  
 Val Asp Lys Leu Ala Pro Leu Pro Leu Asp Asn Ile Leu Pro Phe  
                   35                  40                  45  
 Met Asp Pro Leu Lys Leu Leu Leu Lys Thr Leu Gly Ile Ser Val  
                   50                  55                  60  
 Glu His Leu Val Glu Gly Leu Arg Lys Cys Val Asn Glu Leu Gly  
                   65                  70                  75  
 Pro Glu Ala Ser Glu Ala Val Lys Lys Leu Leu Glu Ala Leu Ser  
                   80                  85                  90  
 His Leu Val

<210> 67  
 <211> 71  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <223> Incyte Clone No: 674760

<400> 67  
 Met Thr Ala Gly Gln Phe Pro Ala Leu Val Ser Leu Ala Leu Leu  
 1 5 10 15  
 Leu Asp Gly Gly Arg Arg Ala Ser Ala Arg Arg Asn Arg Gly His  
 20 25 30  
 Leu Trp Val Phe Cys Thr Ser Phe Leu Leu Ala Pro Trp Glu Val  
 35 40 45  
 Glu Asp Val Gly Trp Lys Lys Gly Leu Asp Leu Pro Pro Ser Ser  
 50 55 60  
 Ser Pro Pro Ser Pro Lys Glu Leu Ala Leu Gln  
 65 70

<210> 68  
 <211> 394  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <223> Incyte Clone No: 1229438

<400> 68  
 Met Lys Arg Gln Asn Val Arg Thr Leu Ala Leu Ile Val Cys Thr  
 1 5 10 15  
 Phe Thr Tyr Leu Leu Val Gly Ala Ala Val Phe Asp Ala Leu Glu  
 20 25 30  
 Ser Glu Pro Glu Leu Ile Glu Arg Gln Arg Leu Glu Leu Arg Gln  
 35 40 45  
 Gln Glu Leu Arg Ala Arg Tyr Asn Leu Ser Gln Gly Gly Tyr Glu  
 50 55 60  
 Glu Leu Glu Arg Val Val Leu Arg Leu Lys Pro His Lys Ala Gly  
 65 70 75  
 Val Gln Trp Arg Phe Ala Gly Ser Phe Tyr Phe Ala Ile Thr Val  
 80 85 90  
 Ile Thr Thr Ile Gly Tyr Gly His Ala Ala Pro Ser Thr Asp Gly  
 95 100 105  
 Gly Lys Val Phe Cys Met Phe Tyr Ala Leu Leu Gly Ile Pro Leu  
 110 115 120  
 Thr Leu Val Met Phe Gln Ser Leu Gly Glu Arg Ile Asn Thr Leu  
 125 130 135  
 Val Arg Tyr Leu Leu His Arg Ala Lys Lys Gly Leu Gly Met Arg  
 140 145 150  
 Arg Ala Asp Val Ser Met Ala Asn Met Val Leu Ile Gly Phe Phe  
 155 160 165  
 Ser Cys Ile Ser Thr Leu Cys Ile Gly Ala Ala Ala Phe Ser His

```

170      175      180
Tyr Glu His Trp Thr Phe Phe Gln Ala Tyr Tyr Tyr Cys Phe Ile
185      190      195
Thr Leu Thr Thr Ile Gly Phe Gly Asp Tyr Val Ala Leu Gln Lys
200      205      210
Asp Gln Ala Leu Gln Thr Gln Pro Gln Tyr Val Ala Phe Ser Phe
215      220      225
Val Tyr Ile Leu Thr Gly Leu Thr Val Ile Gly Ala Phe Leu Asn
230      235      240
Leu Val Val Leu Arg Phe Met Thr Met Asn Ala Glu Asp Glu Lys
245      250      255
Arg Asp Ala Glu His Arg Ala Leu Leu Thr Arg Asn Gly Gln Ala
260      265      270
Gly Gly Gly Gly Gly Gly Gly Ser Ala His Thr Thr Asp Thr Ala
275      280      285
Ser Ser Thr Ala Ala Ala Gly Gly Gly Gly Phe Arg Asn Val Tyr
290      295      300
Ala Glu Val Leu His Phe Gln Ser Met Cys Ser Cys Leu Trp Tyr
305      310      315
Lys Ser Arg Glu Lys Leu Gln Tyr Ser Ile Pro Met Ile Ile Pro
320      325      330
Arg Asp Leu Ser Thr Ser Asp Thr Cys Val Glu Gln Ser His Ser
335      340      345
Ser Pro Gly Gly Gly Gly Arg Tyr Ser Asp Thr Pro Ser Arg Arg
350      355      360
Cys Leu Cys Ser Gly Ala Pro Arg Ser Ala Ile Ser Ser Val Ser
365      370      375
Thr Gly Leu His Ser Leu Ser Thr Phe Arg Gly Leu Met Lys Arg
380      385      390
Arg Ser Ser Val

```

&lt;210&gt; 69

&lt;211&gt; 72

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;223&gt; Incyte Clone No: 1236935

&lt;400&gt; 69

```

Met Cys Pro Phe Phe Pro Leu Thr Ser Leu Ile Val Phe Leu Ile
1      5      10      15
Leu Phe Phe Lys Thr Ile Ala Ser Ser Gly Ser Gly Gly Ser Cys
20      25      30
Leu Gly Leu Pro Lys Cys Trp Asp Tyr Arg Arg Glu His Arg Ala
35      40      45
Arg Pro Thr Ile Val Phe Ser Lys His Val Tyr Thr Tyr Ser Met
50      55      60
Arg Met Gln Ile Glu Ile Ser Thr Asn Ile Ser Gln
65      70

```

<210> 70  
 <211> 71  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <223> Incyte Clone No: 1359283

<400> 70  
 Met Arg Leu Thr Gly Leu Thr Leu Leu Ser Leu Met Glu Ser  
 1 5 10 15  
 Leu Gly Gln Val Glu Asp Arg Phe Phe Ser Thr His Arg Arg Phe  
 20 25 30  
 Pro His His Thr Pro Ile Ser Gly Leu Leu Cys Arg Glu Phe Ser  
 35 40 45  
 Leu Pro Lys Arg Ser Gly Val Pro Trp Thr Arg Val Leu Ile Ser  
 50 55 60  
 Cys Ile Trp Arg Ser Gly Ala Gly Lys Arg Met.  
 65 70

<210> 71  
 <211> 247  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <223> Incyte Clone No: 1450703

<400> 71  
 Met His Leu Ala Arg Leu Val Gly Ser Cys Ser Leu Leu Leu Leu  
 1 5 10 15  
 Leu Gly Ala Leu Ser Gly Trp Ala Ala Ser Asp Asp Pro Ile Glu  
 20 25 30  
 Lys Val Ile Glu Gly Ile Asn Arg Gly Leu Ser Asn Ala Glu Arg  
 35 40 45  
 Glu Val Gly Lys Ala Leu Asp Gly Ile Asn Ser Gly Ile Thr His  
 50 55 60  
 Ala Gly Arg Glu Val Glu Lys Val Phe Asn Gly Leu Ser Asn Met  
 65 70 75  
 Gly Ser His Thr Gly Lys Glu Leu Asp Lys Gly Val Gln Gly Leu  
 80 85 90  
 Asn His Gly Met Asp Lys Val Ala His Glu Ile Asn His Gly Ile  
 95 100 105  
 Gly Gln Ala Gly Lys Glu Ala Glu Lys Leu Gly His Gly Val Asn  
 110 115 120  
 Asn Ala Ala Gly Gln Ala Gly Lys Glu Ala Asp Lys Ala Val Gln  
 125 130 135  
 Gly Phe His Thr Gly Val His Gln Ala Gly Lys Glu Ala Glu Lys  
 140 145 150  
 Leu Gly Gln Gly Val Asn His Ala Ala Asp Gln Ala Gly Lys Glu  
 155 160 165  
 Val Glu Lys Leu Gly Gln Gly Ala His His Ala Ala Gly Gln Ala



```

      170      175      180
Gly Lys Glu Leu Gln Asn Ala His Asn Gly Val Asn Gln Ala Ser
      185      190      195
Lys Glu Ala Asn Gln Leu Leu Asn Gly Asn His Gln Ser Gly Ser
      200      205      210
Ser Ser His Gln Gly Gly Ala Thr Thr Thr Pro Leu Ala Ser Gly
      215      220      225
Ala Ser Val Asn Thr Pro Phe Ile Asn Leu Pro Ala Leu Trp Arg
      230      235      240
Ser Val Ala Asn Ile Met Pro
      245

```

```

<210> 72
<211> 73
<212> PRT
<213> Homo sapiens

```

```

<220>
<221> misc_feature
<223> Incyte Clone No: 1910668

```

```

<400> 72
Met Thr Cys Trp Met Leu Pro Pro Ile Ser Phe Leu Ser Tyr Leu
  1          5          10          15
Pro Leu Trp Leu Gly Pro Ile Trp Pro Cys Ser Gly Ser Thr Leu
      20          25          30
Gly Lys Pro Asp Pro Gly Val Trp Pro Ser Leu Phe Arg Pro Trp
      35          40          45
Asp Ala Ala Ser Pro Gly Asn Tyr Ala Leu Ser Arg Gly Glu Asn
      50          55          60
Gln Tyr Glu Lys Trp Gly Gln Gly Thr His Ser Ser Leu
      65          70

```

```

<210> 73
<211> 70
<212> PRT
<213> Homo sapiens

```

```

<220>
<221> misc_feature
<223> Incyte Clone No: 1955143

```

```

<400> 73
Met Gly Arg Leu Arg Tyr Phe Phe Ser Leu Leu Leu Arg Trp
  1          5          10          15
Gly Gln Leu Leu Gly Ala Asp Glu Phe Cys Cys His Lys Ser Tyr
      20          25          30
Ile Ala His Leu Val Cys Thr Glu Ser Ala Ile Leu Asn Pro Gly
      35          40          45
His Ala Leu Glu Leu Tyr Lys Lys Asn Leu Gln Val Ser Ile Leu
      50          55          60

```

Ser Pro Tyr Pro Thr Asp Pro Ile His Leu  
65 70

<210> 74  
<211> 67  
<212> PRT  
<213> Homo sapiens

<220>  
<221> misc\_feature  
<223> Incyte Clone No: 1961637

<400> 74  
Met Met Phe Thr Ser Leu Ser Leu Ala Leu Pro Phe Leu Leu Gln  
1 5 10 15  
Thr Met Leu Cys Leu Arg Ala Leu Leu Ile Ala Val Pro His Gly  
20 25 30  
His Asp Trp Asn Arg Asp Ala Thr Ser Phe Tyr Thr Ser Thr Val  
35 40 45  
Ser Trp Val Lys Ser Phe Phe Leu Phe Val Leu Asp Gly Val Ser  
50 55 60  
Leu Leu Leu Pro Arg Leu Glu  
65

<210> 75  
<211> 91  
<212> PRT  
<213> Homo sapiens

<220>  
<221> misc\_feature  
<223> Incyte Clone No: 1990762

<400> 75  
Met Trp Pro Thr Thr Trp Ala Trp Ser Trp Val Gln Thr Leu Thr  
1 5 10 15  
Leu Ala Leu Leu Ile Ser Cys Val Thr Leu Gly Gln Leu Ile Thr  
20 25 30  
Thr Leu Gln Val Ser Phe Leu Ile Cys Glu Met Asp Val Ile Ile  
35 40 45  
Gly Cys Asp Glu Met Ile Pro Ser Glu Ser Leu Val Leu Leu Trp  
50 55 60  
Pro Pro Pro Leu Leu Leu Gly Glu Phe Trp Ile Trp Asn Pro  
65 70 75  
Val Ser Arg Ile Leu Phe Trp Leu Cys His Val Pro Ala Gly Gln  
80 85 90  
Leu

<210> 76  
 <211> 56  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <223> Incyte Clone No: 1994131

<400> 76  
 Met Asn Glu Trp Trp Leu Leu Leu Leu Leu His Leu His Pro Pro  
 1 5 10 15  
 Arg Val Ile Ser Pro Phe Trp Phe Ile Val Ser Val Leu Thr Ala  
 20 25 30  
 Cys Asp Asn Arg Lys Tyr Ile Leu Leu Arg Thr Val Pro Val Phe  
 35 40 45  
 Ser Phe Pro Glu Asn Thr Tyr Phe Asp Val Gly  
 50 55

<210> 77  
 <211> 112  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <223> Incyte Clone No: 1997745

<400> 77  
 Met Pro Leu Phe Leu Ser Ile Pro Ser Leu Phe Leu Thr Leu Ser  
 1 5 10 15  
 Gly Leu Gly Leu Ala Val Gln Ser Pro Ala Gly Gly Cys Trp Gly  
 20 25 30  
 Leu Ser Leu Cys Arg His Cys Val Phe Leu Arg Gly Cys Pro Gln  
 35 40 45  
 Asn Thr Pro Pro Ala Pro Trp Gly Ser Ser Gly Ser His Phe Ser  
 50 55 60  
 Trp Ser Leu Arg Ser Gln Lys Gln Leu Leu Glu Glu Ala Lys Lys  
 65 70 75  
 Arg Leu Gly Trp Leu Leu Val Leu Met Met Ala Phe Ile Leu Leu  
 80 85 90  
 Gly His Phe Gly Tyr Ile His Gly His Cys Phe His Leu Ser Phe  
 95 100 105  
 Leu Pro Val Pro Pro Leu Pro  
 110

<210> 78  
 <211> 54  
 <212> PRT  
 <213> Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;223&gt; Incyte Clone No: 2009035

&lt;400&gt; 78

Met Met Leu Gln Pro Val Asp Leu Leu Gln Ser Tyr Leu Leu Leu  
1 5 10 15  
Leu Tyr Cys Trp Ser Phe Ser Leu Leu Phe Thr Leu Leu Cys Asn  
20 25 30  
Ala Val Arg Asn Asp Phe Phe His Lys Leu Phe Ser Ile Tyr Trp  
35 40 45  
Met Tyr Asn Leu Thr His Ser Lys His  
50

&lt;210&gt; 79

&lt;211&gt; 57

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;223&gt; Incyte Clone No: 2009152

&lt;400&gt; 79

Met Lys Phe Tyr Ala Val Leu Leu Ser Ile Cys Leu Leu Leu Ser  
1 5 10 15  
Cys Trp Cys Ala Cys His Val Arg Asp Cys Asn Leu Ile Cys Leu  
20 25 30  
Phe Ser Thr Val Lys Ala Ile Thr Arg Glu Leu Leu Gln Leu Pro  
35 40 45  
Ser Tyr Val Lys Arg Phe Phe Phe Asn Ser Leu Arg  
50 55

&lt;210&gt; 80

&lt;211&gt; 52

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;223&gt; Incyte Clone No: 2061752

&lt;400&gt; 80

Met Gln Arg Leu Gly Lys Ala Pro Gly Thr Trp Gln Ala Ile Ser  
1 5 10 15  
Lys Cys Trp Leu Leu Leu Leu Ser Leu Pro Phe Ser Gln Ser  
20 25 30  
Ile Ile Ile Ser Leu Arg Ala Gly Thr Met Ser Tyr Leu Pro Leu  
35 40 45  
Tyr Phe Pro Gln Tyr Phe Pro  
50

<210> 81  
 <211> 64  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <223> Incyte Clone No: 2061933

<400> 81  
 Met Lys Leu Leu Leu Lys Leu Asp Phe Phe Ile Leu Leu Gly  
     1                  5                  10                  15  
 Ser Glu Glu Ser Arg Cys Leu Val Asp Val Gln Tyr Val Ile Phe  
                   20                  25                  30  
 Phe Leu Ile Glu Cys Val His Leu Lys Ser Ser Leu Thr Phe Leu  
                   35                  40                  45  
 Glu Arg Leu Leu Ser Ile Asn Asn Gly Ile Leu Glu Glu Lys Trp  
                   50                  55                  60  
 Phe Phe Lys Ser

<210> 82  
 <211> 65  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <223> Incyte Clone No: 2081422

<400> 82  
 Met Lys Pro Leu Ile Pro Phe Leu Ser Pro Pro Pro Leu Leu Pro  
     1                  5                  10                  15  
 Leu Thr Phe Phe Leu Ser Ser Leu Leu Leu Ser Pro Leu Cys Arg  
                   20                  25                  30  
 Ala Leu Gly Thr Ser Gln Ala Val Pro Pro Leu Arg Ala Leu Ser  
                   35                  40                  45  
 Val Thr Asp Ala His Gly Ser Leu Leu Leu His Pro Lys Thr Leu  
                   50                  55                  60  
 Ala Cys Pro Cys Leu  
                   65

<210> 83  
 <211> 56  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc\_feature

<223> Incyte Clone No: 2101278

<400> 83

```
Met Arg Ala Asp Arg Leu Leu Pro Ile Ser Ala Leu Cys Leu Leu
  1           5           10           15
Tyr Thr Pro Gly Gly Ala Leu Glu Pro Ala Gln Val Gly Tyr Thr
           20           25           30
Ile Phe Leu Asn Ser Ile Trp Leu Pro Ala Tyr Phe Phe His Leu
           35           40           45
Phe Thr Val Ile Ser Gly Val Phe Leu Phe Ile
           50           55
```

<210> 84

<211> 120

<212> PRT

<213> Homo sapiens

<220>

<221> misc\_feature

<223> Incyte Clone No: 2121353

<400> 84

```
Met Pro Ala Leu Pro Pro Gly Phe Ser Gln Ala Gly Ser Cys Val
  1           5           10           15
Pro Thr Gly Ser Ser Leu Val Leu Cys Leu Leu Ala Ala Ser Leu
           20           25           30
Leu Leu Phe Val Pro Thr Leu Ala Leu Leu Thr Gly Ala Thr Thr
           35           40           45
Cys Trp Cys Leu His Asn Lys Arg Leu Ala Leu Arg Pro Leu Ala
           50           55           60
Trp Gln Gly Leu Trp Gly Leu Val Ser Thr Arg Leu Ser His Gly
           65           70           75
Arg Thr Ser Phe Tyr Phe Asn Ser Leu Pro Leu Gln Thr Asn Ser
           80           85           90
Ser Thr Cys Gln Asn His Ser Trp Asp Ser Gly Ala Arg Ala Thr
           95          100          105
Ala Leu Ala Ser Gly Arg Thr Gln Glu Gly Gly Val Gly Ser Val
          110          115          120
```

<210> 85

<211> 67

<212> PRT

<213> Homo sapiens

<220>

<221> misc\_feature

<223> Incyte Clone No: 2241736

<400> 85

```
Met Asn Ser Leu Val Leu Phe Leu Gly His Leu Gly Leu Leu Ile
  1           5           10           15
```

Lys Asp Cys Val Leu Leu Phe Ala Met Ser Lys Val Ser Gln Lys  
 20 25 30  
 Gln Lys Val Leu Gly Pro Phe Gly Ser Pro Glu Leu Glu Ser Leu  
 35 40 45  
 Gly Ile Gly Pro Arg Tyr Leu His Phe His Arg Phe Leu Val Gly  
 50 55 60  
 Asp Phe Leu Gln Ala Lys Val  
 65

<210> 86  
 <211> 62  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc feature  
 <223> Incyte Clone No: 2271935

<400> 86  
 Met Ala Trp Leu Ser Phe Ala Ala Val Glu Met Thr Leu Leu Leu  
 1 5 10 15  
 His Ser Ser Ser Leu Leu Ser Phe Ala Lys Val Val Leu Ser Leu  
 20 25 30  
 Pro Glu Ile Arg Pro Phe Gly Asp Gly Asn Phe Ser Leu Lys Gln  
 35 40 45  
 Ser Ser Lys Gln Asn Pro Asn Pro Ala Arg Val Gly Arg Lys Ser  
 50 55 60  
 Met Phe

<210> 87  
 <211> 75  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <223> Incyte Clone No: 2295344

<400> 87  
 Met Met Ile Leu Leu Ser Leu Leu Val Ala Leu Ile Ser Val Ser  
 1 5 10 15  
 Leu Val Phe Leu Gly Leu Val Arg Phe Ser Arg Glu Asp Phe Ser  
 20 25 30  
 Phe Pro Leu Trp Arg Glu Lys Ala Phe Tyr Gln His Ser Ser Ser  
 35 40 45  
 Ser Val Gly Glu Arg Leu Gln Ala Leu Arg Lys His Ala Phe Thr  
 50 55 60  
 Leu Phe Gly Thr Ile Pro Leu Leu Val Thr Val Pro Gln Val Pro  
 65 70 75

```
<220>
<221> misc_feature
<223> Incyte Clone No: 2303994
```

```
<210> 89
<211> 50
<212> PRT
<213> Homo sapiens
```

[illegible]

```
<220>
<221> misc_feature
<223> Incyte Clone No: 2646362
```



<400> 90  
 Met Trp Trp Ala Leu Cys Ser Met Leu Pro Leu Leu Gly Cys Ala  
 1 5 10 15  
 Cys Ser Ser Gly Cys Trp Gly Ser Gly Pro Thr Pro Leu Leu Ala  
 20 25 30  
 Glu Pro Thr Phe Leu Cys Val Ser Ser Arg Pro His Asn Pro Leu  
 35 40 45  
 Ser Phe Leu Ser Val Leu Pro Cys Ser Arg Gly Pro Gly Pro Ser  
 50 55 60  
 Gly Leu Gln Gly Asp Gly Ala Gly Leu Pro Ala His Leu Gly Pro  
 65 70 75  
 Leu Ser Cys Ile Cys Leu Pro Ser Leu Leu Cys Asp Leu Gly Glu  
 80 85 90  
 Arg Gln Cys Pro Leu Trp Ala Val Arg Ser Thr Gln Cys Leu Ile  
 95 100 105  
 Ala Gly Lys Lys Val Leu Gln Arg Leu Cys Pro  
 110 115

<210> 91  
 <211> 67  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <223> Incyte Clone No: 2657146

<400> 91  
 Met Ile Cys Gln Cys Leu Arg Leu Leu Leu Val Leu Val Thr Leu  
 1 5 10 15  
 Leu Ile Cys Phe Ser Pro Asp Arg Leu Thr Cys Pro Leu Asn Ser  
 20 25 30  
 Ala Val Val Leu Ala Ser Tyr Ala Val Gln Cys Lys Ser Gln Arg  
 35 40 45  
 Glu His Phe Thr Asp Gly Gln Val Val Leu Ile Ser Val Trp Arg  
 50 55 60  
 Lys Ser Leu Val Pro Pro Ala  
 65

<210> 92  
 <211> 538  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <223> Incyte Clone No: 2755786

<400> 92  
 Met Ala Gly Ala Arg Ala Ala Ala Ala Ala Ser Ala Gly Ser  
 1 5 10 15

Ser Ala Ser Ser Gly Asn Gln Pro Pro Gln Glu Leu Gly Leu Gly  
 20 25 30  
 Glu Leu Leu Glu Glu Phe Ser Arg Thr Gln Tyr Arg Ala Lys Asp  
 35 40 45  
 Gly Ser Gly Thr Gly Gly Ser Lys Val Glu Arg Ile Glu Lys Arg  
 50 55 60  
 Cys Leu Glu Leu Phe Gly Arg Asp Tyr Cys Phe Ser Val Ile Pro  
 65 70 75  
 Asn Thr Asn Gly Asp Ile Cys Gly His Tyr Pro Arg His Ile Val  
 80 85 90  
 Phe Leu Glu Tyr Glu Ser Ser Glu Lys Glu Lys Asp Thr Phe Glu  
 95 100 105  
 Ser Thr Val Gln Val Ser Lys Leu Gln Asp Leu Ile His Arg Ser  
 110 115 120  
 Lys Met Ala Arg Cys Arg Gly Arg Phe Val Cys Pro Val Ile Leu  
 125 130 135  
 Phe Lys Gly Lys His Ile Cys Arg Ser Ala Thr Leu Ala Gly Trp  
 140 145 150  
 Gly Glu Leu Tyr Gly Arg Ser Gly Tyr Asn Tyr Phe Phe Ser Gly  
 155 160 165  
 Gly Ala Asp Asp Ala Trp Ala Asp Val Glu Asp Val Thr Glu Glu  
 170 175 180  
 Asp Cys Ala Leu Arg Ser Gly Asp Thr His Leu Phe Asp Lys Val  
 185 190 195  
 Arg Gly Tyr Asp Ile Lys Leu Leu Arg Tyr Leu Ser Val Lys Tyr  
 200 205 210  
 Ile Cys Asp Leu Met Val Glu Asn Lys Lys Val Lys Phe Gly Met  
 215 220 225  
 Asn Val Thr Ser Ser Glu Lys Val Asp Lys Ala Gln Arg Tyr Ala  
 230 235 240  
 Asp Phe Thr Leu Leu Ser Ile Pro Tyr Pro Gly Cys Glu Phe Phe  
 245 250 255  
 Lys Glu Tyr Lys Asp Arg Asp Tyr Met Ala Glu Gly Leu Ile Phe  
 260 265 270  
 Asn Trp Lys Gln Asp Tyr Val Asp Ala Pro Leu Ser Ile Pro Asp  
 275 280 285  
 Phe Leu Thr His Ser Leu Asn Ile Asp Trp Ser Gln Tyr Gln Cys  
 290 295 300  
 Trp Asp Leu Val Gln Gln Thr Gln Asn Tyr Leu Lys Leu Leu Leu  
 305 310 315  
 Ser Leu Val Asn Ser Asp Asp Asp Ser Gly Leu Leu Val His Cys  
 320 325 330  
 Ile Ser Gly Trp Asp Arg Thr Pro Leu Phe Ile Ser Leu Leu Arg  
 335 340 345  
 Leu Ser Leu Trp Ala Asp Gly Leu Ile His Thr Ser Leu Lys Pro  
 350 355 360  
 Thr Glu Ile Leu Tyr Leu Thr Val Ala Tyr Asp Trp Phe Leu Phe  
 365 370 375  
 Gly His Met Leu Val Asp Arg Leu Ser Lys Gly Glu Glu Ile Phe  
 380 385 390  
 Phe Phe Cys Phe Asn Phe Leu Lys His Ile Thr Ser Glu Glu Phe  
 395 400 405  
 Ser Ala Leu Lys Thr Gln Arg Arg Lys Ser Leu Pro Ala Arg Asp  
 410 415 420  
 Gly Gly Phe Thr Leu Glu Asp Ile Cys Met Leu Arg Arg Lys Asp  
 425 430 435  
 Arg Gly Ser Thr Thr Ser Leu Gly Ser Asp Phe Ser Leu Val Met

```

      440      445      450
Glu Ser Ser Pro Gly Ala Thr Gly Ser Phe Thr Tyr Glu Ala Val
      455      460      465
Glu Leu Val Pro Ala Gly Ala Pro Thr Gln Ala Ala Trp Leu Ala
      470      475      480
Ala Leu Ser Asp Arg Glu Thr Arg Leu Gln Glu Val Arg Ser Ala
      485      490      495
Phe Leu Ala Ala Tyr Ser Ser Thr Val Gly Leu Arg Ala Val Ala
      500      505      510
Pro Ser Pro Ser Gly Ala Ile Gly Gly Leu Leu Glu Gln Phe Ala
      515      520      525
Arg Gly Val Gly Leu Arg Ser Ile Ser Ser Asn Ala Leu
      530      535

```

<210> 93  
 <211> 58  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <223> Incyte Clone No: 2831245

```

<400> 93
Met Glu Met Lys Gly Ser Arg Val Trp Leu Leu Leu Phe Met
  1      5      10      15
Trp Lys Ala Arg Pro Thr Phe Phe Gln Ser Cys Val Val Pro Phe
      20      25      30
Ile Leu Ser Pro Gln Asn Cys Val Gln Thr His Ser Leu Gly Pro
      35      40      45
Gly Val Trp Leu Gly Val Phe Pro Ser Gly Ser Leu His
      50      55

```

<210> 94  
 <211> 119  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <223> Incyte Clone No: 3116250

```

<400> 94
Met Lys Val Leu Ile Ser Ser Leu Leu Leu Leu Pro Leu Met
  1      5      10      15
Leu Met Ser Met Val Ser Ser Ser Leu Asn Pro Gly Val Ala Arg
      20      25      30
Gly His Arg Asp Arg Gly Gln Ala Ser Arg Arg Trp Leu Gln Glu
      35      40      45
Gly Gly Gln Glu Cys Glu Cys Lys Asp Trp Phe Leu Arg Ala Pro
      50      55      60

```

```

Arg Arg Lys Phe Met Thr Val Ser Gly Leu Pro Lys Lys Gln Cys
      65                      70                      75
Pro Cys Asp His Phe Lys Gly Asn Val Lys Lys Thr Arg His Gln
      80                      85                      90
Arg His His Arg Lys Pro Asn Lys His Ser Arg Ala Cys Gln Gln
      95                      100                     105
Phe Leu Lys Gln Cys Gln Leu Arg Ser Phe Ala Leu Pro Leu
      110                     115

```

<210> 95  
 <211> 128  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <223> Incyte Clone No: 3129630

```

<400> 95
Met Ala Tyr Ser Thr Val Gln Arg Val Ala Leu Ala Ser Gly Leu
  1          5          10          15
Val Leu Ala Leu Ser Leu Leu Leu Pro Lys Ala Phe Leu Ser Arg
      20          25          30
Gly Lys Arg Gln Glu Pro Pro Pro Thr Pro Glu Gly Lys Leu Gly
      35          40          45
Arg Phe Pro Pro Met Met His His His Gln Ala Pro Ser Asp Gly
      50          55          60
Gln Thr Pro Gly Ala Arg Phe Gln Arg Ser His Leu Ala Glu Ala
      65          70          75
Phe Ala Lys Ala Lys Gly Ser Gly Gly Gly Ala Gly Gly Gly Gly
      80          85          90
Ser Gly Arg Gly Leu Met Gly Gln Ile Ile Pro Ile Tyr Gly Phe
      95          100         105
Gly Ile Phe Leu Tyr Ile Leu Tyr Ile Leu Phe Lys Val Ser Arg
      110         115         120
Ile Ile Leu Ile Ile Leu His Gln
      125

```

<210> 96  
 <211> 124  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <223> Incyte Clone No: 007632

```

<400> 96
Met Tyr Lys Leu Ala Ser Cys Cys Leu Leu Phe Ile Gly Phe Leu
  1          5          10          15
Asn Pro Leu Leu Ser Leu Pro Leu Leu Asp Ser Arg Glu Ile Ser

```

	20		25		30
Phe	Gln	Leu	Ser	Ala	Pro
	35		40		45
Glu	Leu	Glu	Arg	Ala	Ser
	50		55		60
Gly	Ala	Glu	Arg	Gly	Asp
	65		70		75
Asn	Ile	Phe	Asn	Pro	Arg
	80		85		90
Ser	Gly	Gln	Asp	Pro	Asn
	95		100		105
Ile	Trp	Lys	Pro	Tyr	Lys
	110		115		120
Lys	Tyr	Cys	Val		

&lt;210&gt; 97

&lt;211&gt; 182

&lt;212&gt; PRT

&lt;213&gt; Hcmo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;223&gt; Incyte Clone No: 1236968

&lt;400&gt; 97

Met	Trp	Pro	Leu	Ser	Ser	Asp	Ser	Ser	Trp	Ser	Leu	Trp	Ile	Ser
1				5					10					15
Thr	Gly	Met	Ala	Pro	Ala	Pro	Ser	Ser	Ser	Thr	Arg	Ser	Phe	Ser
				20					25					30
Glu	Ser	Leu	Lys	Gln	Lys	Leu	Val	Arg	Val	Leu	Glu	Glu	Asn	Leu
				35					40					45
Ile	Leu	Ser	Glu	Lys	Ile	Gln	Gln	Leu	Glu	Glu	Gly	Ala	Ala	Ile
				50					55					60
Ser	Ile	Val	Ser	Gly	Gln	Gln	Ser	His	Thr	Tyr	Asp	Asp	Leu	Leu
				65					70					75
His	Lys	Asn	Gln	Gln	Leu	Thr	Met	Gln	Val	Ala	Cys	Leu	Asn	Gln
				80					85					90
Glu	Leu	Ala	Gln	Leu	Lys	Lys	Leu	Glu	Lys	Thr	Val	Ala	Ile	Leu
				95					100					105
His	Glu	Ser	Gln	Arg	Ser	Leu	Val	Val	Thr	Asn	Glu	Tyr	Leu	Leu
				110					115					120
Gln	Gln	Leu	Asn	Lys	Glu	Pro	Lys	Gly	Tyr	Ser	Gly	Lys	Ala	Leu
				125					130					135
Leu	Pro	Pro	Glu	Lys	Gly	His	His	Leu	Gly	Arg	Ser	Ser	Pro	Phe
				140					145					150
Gly	Lys	Ser	Thr	Leu	Ser	Ser	Ser	Ser	Pro	Val	Ala	His	Glu	Thr
				155					160					165
Gly	Gln	Tyr	Leu	Ile	Gln	Ser	Val	Leu	Asp	Ala	Ala	Pro	Glu	Pro
				170					175					180
Gly	Leu													

<210> 98  
 <211> 237  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <223> Incyte Clone No: 1334153

<400> 98  
 Met Lys Gly Ile Leu Val Ala Gly Ile Thr Ala Val Leu Val Ala  
 1 5 10 15  
 Ala Val Glu Ser Leu Ser Cys Val Pro Cys Asn Ser Trp Glu Lys  
 20 25 30  
 Ser Cys Val Asn Ser Ile Ala Ser Glu Cys Pro Ser His Ala Asn  
 35 40 45  
 Thr Ser Cys Ile Ser Ser Ser Ala Ser Ser Ser Leu Glu Thr Pro  
 50 55 60  
 Val Arg Leu Tyr Gln Asn Met Phe Cys Ser Ala Glu Asn Cys Ser  
 65 70 75  
 Glu Glu Thr His Ile Thr Ala Phe Thr Val His Val Ser Ala Glu  
 80 85 90  
 Glu His Phe His Phe Val Ser Gln Cys Cys Gln Gly Lys Glu Cys  
 95 100 105  
 Ser Asn Thr Ser Asp Ala Leu Asp Pro Pro Leu Lys Asn Val Ser  
 110 115 120  
 Ser Asn Ala Glu Cys Pro Ala Cys Tyr Glu Ser Asn Gly Thr Ser  
 125 130 135  
 Cys Arg Gly Lys Pro Trp Lys Cys Tyr Glu Glu Glu Gln Cys Val  
 140 145 150  
 Phe Leu Val Ala Glu Leu Lys Asn Asp Ile Glu Ser Lys Ser Leu  
 155 160 165  
 Val Leu Lys Gly Cys Ser Asn Val Ser Asn Ala Thr Cys Gln Phe  
 170 175 180  
 Leu Ser Gly Glu Asn Lys Thr Leu Gly Gly Val Ile Phe Arg Lys  
 185 190 195  
 Phe Glu Cys Ala Asn Val Asn Ser Leu Thr Pro Thr Ser Ala Pro  
 200 205 210  
 Thr Thr Ser His Asn Val Gly Ser Lys Ala Ser Leu Tyr Leu Leu  
 215 220 225  
 Ala Leu Ala Ser Leu Leu Leu Arg Gly Leu Leu Pro  
 230 235

<210> 99  
 <211> 160  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <223> Incyte Clone No: 1396975

<400> 99  
 Met Arg Pro Gly Pro Met Leu Gln Ala Arg Val Ser Ile Pro Ala

```

1           5           10           15
Ala Leu Gly Thr Leu Phe Pro Arg Pro Gly Trp Ala Pro Gly Glu
20           25           30
Val Ser Ser Glu Ile Ser Ser Arg Asp Leu Leu Asn Pro His Pro
35           40           45
Ser Thr Pro Ser Cys Cys Ser Gln Ser Trp Ser Pro Met Ser Val
50           55           60
Leu Glu Pro Asp Ser Arg Gly Pro Pro Pro Ile Ser Leu Thr His
65           70           75
Thr Gly Ile His Thr Pro Gln Lys Thr Ser Gln Met Arg Pro Asp
80           85           90
Ser Gly Ser Arg Gly Met Cys Phe Cys Pro Cys Lys Gly Phe Gly
95           100          105
Glu Gly Gly Asn Ile Val Glu Ala Gly Lys Ser Pro Gln Thr Cys
110          115          120
Ala His Ala Pro Pro Ala Leu Arg Phe His Ser Ala Phe Ser Glu
125          130          135
Cys Pro Cys Cys Thr Gln Thr Thr Gly Gln Glu Arg Pro Ser Leu
140          145          150
Pro Leu Gln Pro Leu Ser Leu Pro Phe Asn
155          160

```

<210> 100  
 <211> 148  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <223> Incyte Clone No: 1501749

```

<400> 100
Met Ala Ala Ser Pro Ala Arg Pro Ala Val Leu Ala Leu Thr Gly
1           5           10           15
Leu Ala Leu Leu Leu Leu Cys Trp Gly Pro Gly Gly Ile Ser
20           25           30
Gly Asn Lys Leu Lys Leu Met Leu Gln Lys Arg Glu Ala Pro Val
35           40           45
Pro Thr Lys Thr Lys Val Ala Val Asp Glu Asn Lys Ala Lys Glu
50           55           60
Phe Leu Gly Ser Leu Lys Arg Gln Lys Arg Gln Leu Trp Asp Arg
65           70           75
Thr Arg Pro Glu Val Gln Gln Trp Tyr Gln Gln Phe Leu Tyr Met
80           85           90
Gly Phe Asp Glu Ala Lys Phe Glu Asp Asp Ile Thr Tyr Trp Leu
95           100          105
Asn Arg Asp Arg Asn Gly His Glu Tyr Tyr Gly Asp Tyr Tyr Gln
110          115          120
Arg His Tyr Asp Glu Asp Ser Ala Ile Gly Pro Arg Ser Pro Tyr
125          130          135
Gly Phe Arg His Gly Ala Ser Val Asn Tyr Asp Asp Tyr
140          145

```

<210> 101  
 <211> 170  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <223> Incyte Clone No: 1575240

<400> 101  
 Met Thr Pro Thr Lys Arg Glu Pro Pro Ala Ala Pro Leu Leu Leu  
 1 5 10 15  
 Arg Val Leu Pro Gln Leu Ser Ala Met Ser Leu Arg Leu Ser Thr  
 20 25 30  
 Arg Arg Glu Asp Met Ile Gly Gln Thr Ser Gly Met Cys Ser Phe  
 35 40 45  
 Cys Ser Phe Gln Asn Met Arg Gly Glu Ser Ile Trp Leu Leu Cys  
 50 55 60  
 Leu Glu Glu Glu Gly Ala Gly Leu Cys Gln Asn Ser Leu Asp Lys  
 65 70 75  
 Arg Phe Ser Gln Lys Glu Gly Cys Ser Asp Asp Lys Ser Pro Leu  
 80 85 90  
 His His Phe Pro Trp Leu Ser Asp Ala Pro Pro Ser Ser His Ala  
 95 100 105  
 Arg Thr Ser Glu Ile Arg Leu Pro Pro Asp Ile Thr Gln Pro Cys  
 110 115 120  
 Leu Thr Lys Arg Gln Trp Phe Ile Pro Ser Leu Gly Glu Lys Arg  
 125 130 135  
 Gly Asn Ala Lys Leu Leu His Gln Leu Leu Ile Leu Leu Pro Ala  
 140 145 150  
 Arg Asn Pro Gly Tyr Leu Gln Val Ser Leu Pro Leu Val Trp Ser  
 155 160 165  
 Trp Leu Ser Leu Phe  
 170

<210> 102  
 <211> 150  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <223> Incyte Clone No: 1647884

<400> 102  
 Met Gly Ala Ala Ala Trp Ala Arg Pro Leu Ser Val Ser Phe Leu  
 1 5 10 15  
 Leu Leu Leu Leu Pro Leu Pro Gly Met Pro Ala Gly Ser Trp Asp  
 20 25 30  
 Pro Ala Gly Tyr Leu Leu Tyr Cys Pro Cys Met Gly Lys Ala Ser  
 35 40 45  
 Gln Ala Leu Cys Ser Asp Gly Glu Thr Glu Ala Gly Arg Gly Lys  
 50 55 60



```

Ala Thr Pro Gln Met Arg Pro Glu Thr Pro Ser Gln Val Gln Glu
      65              70              75
Arg Thr Ser Glu Arg Asp Gly Ala Cys Ser Ser Pro Leu Cys Leu
      80              85              90
Ser Cys Lys Gly Thr Glu Gly Pro Thr Cys Pro Thr Phe His Leu
      95              100             105
Thr Asp Glu Lys Thr Glu Ala Gly Arg Gly Tyr Val Thr Cys Leu
      110             115             120
Arg Ser Lys Pro Val Gln Gly Pro Val Asn Gly Val Ser Gly Ala
      125             130             135
Gly Leu Asp Val Thr Asp Pro Arg Trp Leu Leu Val Ile Phe His
      140             145             150

```

<210> 103  
 <211> 142  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <223> Incyte Clone No: 1661144

```

<400> 103
Met Gly Cys Leu Val Trp Gly Pro Ser Trp Pro Pro Leu Ser Leu
  1          5          10          15
Leu Ala Ser Leu Leu His Ser Gly Ile Ala Gly Arg Cys Leu Leu
  20         25         30
Cys Leu Phe Lys Gly Leu Ala Ala Ala Ala Ser Leu Gln Ile Arg
  35         40         45
Asp Leu Ala Ser Arg Leu Thr Thr Gly Pro Arg Thr Cys Arg Val
  50         55         60
Gln Pro Pro Pro His Pro Gln Ser Ser Pro Pro Trp Pro Gly Pro
  65         70         75
Pro Gly Ala Glu Thr Cys Arg Pro Leu Ser Arg Thr Val Gly Gly
  80         85         90
Val Cys Pro Ser Asp Trp Pro Val Ser Trp Leu Leu Leu Pro Pro
  95        100        105
Leu Pro Glu Val Val Thr Cys Ser Cys Pro Arg Ile Lys Ala Arg
  110       115       120
Pro Glu Arg Thr Pro Glu Leu Leu Cys Ala Trp Gly Gly Arg Gly
  125       130       135
Lys His Ser Gln Leu Val Ala
  140

```

<210> 104  
 <211> 110  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc\_feature

&lt;223&gt; Incyte Clone No: 1685409

&lt;400&gt; 104

```

Met Glu Thr Gly Arg Leu Leu Ser Leu Ser Ser Leu Pro Leu Val
  1           5           10           15
Leu Leu Gly Trp Glu Tyr Ser Ser Gln Thr Leu Asn Leu Val Pro
          20           25           30
Ser Thr Ser Ile Leu Ser Phe Val Pro Phe Ile Pro Leu His Leu
          35           40           45
Val Leu Phe Ala Leu Trp Tyr Leu Pro Val Pro His His Leu Tyr
          50           55           60
Pro Gln Gly Leu Gly Asp His Ala Ala Glu Ala Glu Lys Gly Lys
          65           70           75
Arg Glu Glu Gly Gly Thr Gln Val Ala Leu Trp Leu Arg Val Gln
          80           85           90
Pro Ser Cys Pro Ser Pro Val Cys Leu Glu Pro Val Pro Pro Arg
          95           100          105
Ser Arg Phe Leu Leu
          110

```

&lt;210&gt; 105

&lt;211&gt; 120

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;223&gt; Incyte Clone No: 1731419

&lt;400&gt; 105

```

Met Ser Arg Ala Gly Met Leu Gly Val Val Cys Ala Leu Leu Val
  1           5           10           15
Trp Ala Tyr Leu Ala Val Gly Lys Leu Val Val Arg Met Thr Phe
          20           25           30
Thr Glu Leu Cys Thr His His Pro Trp Ser Leu Arg Cys Glu Ser
          35           40           45
Phe Cys Arg Ser Arg Val Thr Ala Cys Leu Pro Ala Pro Ala Pro
          50           55           60
Trp Leu Arg Pro Phe Leu Cys Pro Met Leu Phe Ser Asp Arg Asn
          65           70           75
Pro Val Glu Cys His Leu Phe Gly Glu Ala Val Ser Asp Pro Val
          80           85           90
Cys Lys Gly Leu Leu Pro His Tyr Phe Trp His Pro Thr Phe Phe
          95           100          105
Pro Val Lys Ala Asn Cys Leu Val Ser Phe Cys Pro Thr Thr Val
          110           115          120

```

&lt;210&gt; 106

&lt;211&gt; 135

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

<220>  
 <221> misc\_feature  
 <223> Incyte Clone No: 2650265

<400> 106  
 Met Ala Arg Phe Trp Val Cys Val Ala Gly Ala Gly Phe Phe Leu  
 1 5 10 15  
 Ala Phe Leu Val Leu His Ser Arg Phe Cys Gly Ser Pro Val Leu  
 20 25 30  
 Arg Asn Phe Thr Phe Ala Val Ser Trp Arg Thr Glu Lys Ile Leu  
 35 40 45  
 Tyr Arg Leu Asp Val Gly Trp Pro Lys His Pro Glu Tyr Phe Thr  
 50 55 60  
 Gly Thr Thr Phe Cys Val Ala Val Asp Ser Leu Asn Gly Leu Val  
 65 70 75  
 Tyr Ile Gly Gln Arg Gly Asp Asn Ile Pro Lys Ile Leu Val Phe  
 80 85 90  
 Thr Glu Asp Gly Tyr Phe Leu Arg Ala Trp Asn Tyr Thr Val Asp  
 95 100 105  
 Thr Pro His Gly Ile Phe Ala Ala Ser Thr Leu Tyr Glu Gln Ser  
 110 115 120  
 Val Trp Ile Thr Asp Val Gly Ser Gly Met Tyr Ser Asn Ile Tyr  
 125 130 135

<210> 107  
 <211> 301  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <223> Incyte Clone No: 2677129

<400> 107  
 Met Leu Met Ile Ile Ile Ile Glu Pro Phe Ser Val Leu Ile Leu  
 1 5 10 15  
 Phe Lys Ser Gly Ile Leu Ala Asp Phe Phe Ala Leu Leu Leu Leu  
 20 25 30  
 Ile Asn Phe Phe Leu Val Ser Phe Phe Leu Ala Tyr Pro Leu Phe  
 35 40 45  
 Asn Asn Gln Ile Asn Ser Arg Ser Met Asn Glu Ile Lys Asn Leu  
 50 55 60  
 Gln Tyr Leu Pro Arg Thr Ser Glu Pro Arg Glu Val Leu Phe Glu  
 65 70 75  
 Asp Arg Thr Arg Ala His Ala Asp His Val Gly Gln Gly Phe Asp  
 80 85 90  
 Trp Gln Ser Thr Ala Ala Val Gly Val Leu Lys Ala Val Gln Phe  
 95 100 105  
 Gly Glu Trp Ser Asp Gln Pro Arg Ile Thr Lys Asp Val Ile Cys  
 110 115 120  
 Phe His Ala Glu Asp Phe Thr Asp Val Val Gln Arg Leu Gln Leu  
 125 130 135  
 Asp Leu His Glu Pro Pro Val Ser Gln Cys Val Gln Trp Val Asp  
 140 145 150

```

Glu Ala Lys Leu Asn Gln Met Arg Arg Glu Gly Ile Arg Tyr Ala
155                               160                               165
Arg Ile Gln Leu Cys Asp Asn Asp Ile Tyr Phe Ile Pro Arg Asn
170                               175                               180
Val Ile His Gln Phe Lys Thr Val Ser Ala Val Cys Ser Leu Ala
185                               190                               195
Trp His Ile Arg Leu Lys Gln Tyr His Pro Val Val Glu Ala Thr
200                               205                               210
Gln Asn Thr Glu Ser Asn Ser Asn Met Asp Cys Gly Leu Thr Gly
215                               220                               225
Lys Arg Glu Leu Glu Val Asp Ser Gln Cys Val Arg Ile Lys Thr
230                               235                               240
Glu Ser Glu Glu Ala Cys Thr Glu Ile Gln Leu Leu Thr Thr Ala
245                               250                               255
Ser Ser Ser Phe Pro Pro Ala Ser Glu Leu Asn Leu Gln Gln Asp
260                               265                               270
Gln Lys Thr Gln Pro Ile Pro Val Leu Lys Val Glu Ser Arg Leu
275                               280                               285
Asp Ser Asp Gln Gln His Asn Leu Gln Glu His Ser Thr Thr Ser
290                               295                               300
Val

```

```

<210> 108
<211> 103
<212> PRT
<213> Homo sapiens

```

```

<220>
<221> misc_feature
<223> Incyte Clone No: 3151073

```

```

<400> 108
Met Ser Phe Val Pro Gly Leu Leu Leu Cys Phe Val Leu Leu Leu
1      5      10      15
Cys Val Ser Pro Val Tyr Leu Pro Ser Arg Ser Pro Ser Thr Phe
20      25      30
Pro Ile Ser Glu Pro Leu Ser Phe Ile Gly Met Ser Ala Trp Pro
35      40      45
Gln Cys Ser Pro Ile Tyr Ser Gln Thr Pro Gly Leu Ala Tyr Glu
50      55      60
Pro Ser Ser Phe Pro Lys Arg Arg Tyr Trp Val Cys Thr Leu His
65      70      75
Glu Ile Lys Trp Glu Cys Pro Arg Ser Arg Arg Thr Ser Asp Ala
80      85      90
Val His Ala Asn Lys Leu Gly Leu Pro Leu Lys Ile Ile
95      100

```

```

<210> 109
<211> 95
<212> PRT
<213> Homo sapiens

```

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;223&gt; Incyte Clone No: 3170095

&lt;400&gt; 109

```

Met Lys Phe Leu Leu Leu Val Leu Ala Ala Leu Gly Phe Leu Thr
  1          5          10          15
Gln Val Ile Pro Ala Ser Ala Gly Gly Ser Lys Cys Val Ser Asn
          20          25          30
Thr Pro Gly Tyr Cys Arg Thr Cys Cys His Trp Gly Glu Thr Ala
          35          40          45
Leu Phe Met Cys Asn Ala Ser Arg Lys Cys Cys Ile Ser Tyr Ser
          50          55          60
Phe Leu Pro Lys Pro Asp Leu Pro Gln Leu Ile Gly Asn His Trp
          65          70          75
Gln Ser Arg Arg Arg Asn Thr Gln Arg Lys Asp Lys Lys Gln Gln
          80          85          90
Thr Thr Val Thr Ser
          95

```

&lt;210&gt; 110

&lt;211&gt; 113

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;223&gt; Incyte Clone No: 3475168

&lt;400&gt; 110

```

Met Ser Pro Ser Pro Arg Trp Gly Phe Leu Cys Val Leu Phe Thr
  1          5          10          15
Ala Val His Pro Ala Pro Ser Thr Ala Pro Val Gln Asp Lys Cys
          20          25          30
Pro Val Asn Thr Trp Glu Ala Met Gln Ala Ser Ser Gln Gln Leu
          35          40          45
Leu Gln Thr Asp Pro Arg Pro Lys Pro Phe Leu Leu Pro Pro Leu
          50          55          60
Pro Pro Leu Leu Leu Ile Ser Ala Gly Thr Glu Val Ser Ser Leu
          65          70          75
Val Phe Gln Lys Ser Pro Leu His Thr Gln Pro Glu Gly Ala Ile
          80          85          90
Lys Thr Ala Gly Gln Pro Thr Ser Val His Ser Lys Val Leu Ser
          95          100          105
Lys Gly Ser Leu Leu Leu Gly Glu
          110

```

&lt;210&gt; 111

&lt;211&gt; 234

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

<220>  
 <221> misc\_feature  
 <223> Incyte Clone No: 3836893

<400> 111  
 Met Arg Lys Thr Arg Leu Trp Gly Leu Leu Trp Met Leu Phe Val  
 1 5 10 15  
 Ser Glu Leu Arg Ala Ala Thr Lys Leu Thr Glu Glu Lys Tyr Glu  
 20 25 30  
 Leu Lys Glu Gly Gln Thr Leu Asp Val Lys Cys Asp Tyr Thr Leu  
 35 40 45  
 Glu Lys Phe Ala Ser Ser Gln Lys Ala Trp Gln Ile Ile Arg Asp  
 50 55 60  
 Gly Glu Met Pro Lys Thr Leu Ala Cys Thr Glu Arg Pro Ser Lys  
 65 70 75  
 Asn Ser His Pro Val Gln Val Gly Arg Ile Ile Leu Glu Asp Tyr  
 80 85 90  
 His Asp His Gly Leu Leu Arg Val Arg Met Val Asn Leu Gln Val  
 95 100 105  
 Glu Asp Ser Gly Leu Tyr Gln Cys Val Ile Tyr Gln Pro Pro Lys  
 110 115 120  
 Glu Pro His Met Leu Phe Asp Arg Ile Arg Leu Val Val Thr Lys  
 125 130 135  
 Gly Phe Ser Gly Thr Pro Gly Ser Asn Glu Asn Ser Thr Gln Asn  
 140 145 150  
 Val Tyr Lys Ile Pro Pro Thr Thr Thr Lys Ala Leu Cys Pro Leu  
 155 160 165  
 Tyr Thr Ser Pro Arg Thr Val Thr Gln Ala Pro Pro Lys Ser Thr  
 170 175 180  
 Ala Asp Val Ser Thr Pro Asp Ser Glu Ile Asn Leu Thr Asn Val  
 185 190 195  
 Thr Asp Ile Ile Arg Val Pro Val Phe Asn Ile Val Ile Leu Leu  
 200 205 210  
 Ala Gly Gly Phe Leu Ser Lys Ser Leu Val Phe Ser Val Leu Phe  
 215 220 225  
 Ala Val Thr Leu Arg Ser Phe Val Pro  
 230

<210> 112  
 <211> 119  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <223> Incyte Clone No: 4072159

<400> 112  
 Met Val Leu Pro Leu Pro Trp Leu Ser Arg Tyr His Phe Leu Arg  
 1 5 10 15  
 Leu Leu Leu Pro Ser Trp Ser Leu Ala Pro Gln Gly Ser His Gly  
 20 25 30  
 Cys Cys Ser Gln Asn Pro Lys Ala Ser Met Glu Glu Gln Thr Asn  
 35 40 45

```

Ser Arg Gly Asn Gly Lys Met Thr Ser Pro Pro Arg Gly Pro Gly
      50              55              60
Thr His Arg Thr Ala Glu Leu Ala Arg Ala Glu Glu Leu Leu Glu
      65              70              75
Gln Gln Leu Glu Leu Tyr Gln Ala Leu Leu Glu Gly Gln Glu Gly
      80              85              90
Ala Trp Glu Ala Gln Ala Leu Val Leu Lys Ile Gln Lys Leu Lys
      95              100             105
Glu Gln Met Arg Arg His Gln Glu Ser Leu Gly Gly Gly Ala
      110             115

```

<210> 113  
 <211> 200  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <223> Incyte Clone No: 1003916

```

<400> 113
Met Ala Ser Ser Leu Thr Cys Thr Gly Val Ile Trp Ala Leu Leu
  1              5              10              15
Ser Phe Leu Cys Ala Ala Thr Ser Cys Val Gly Phe Phe Met Pro
      20              25              30
Tyr Trp Leu Trp Gly Ser Gln Leu Gly Lys Pro Val Ser Phe Gly
      35              40              45
Thr Phe Arg Arg Cys Ser Tyr Pro Val His Asp Glu Ser Arg Gln
      50              55              60
Met Met Val Met Val Glu Glu Cys Gly Arg Tyr Ala Ser Phe Gln
      65              70              75
Gly Ile Pro Ser Ala Glu Trp Arg Ile Cys Thr Ile Val Thr Gly
      80              85              90
Leu Gly Cys Gly Leu Leu Leu Leu Val Ala Leu Thr Ala Leu Met
      95              100             105
Gly Cys Cys Val Ser Asp Leu Ile Ser Arg Thr Val Gly Arg Val
      110             115             120
Ala Gly Gly Ile Gln Phe Leu Gly Gly Leu Leu Ile Gly Ala Gly
      125             130             135
Cys Ala Leu Tyr Pro Leu Gly Trp Asp Ser Glu Glu Val Arg Gln
      140             145             150
Thr Cys Gly Tyr Thr Ser Gly Gln Phe Asp Leu Gly Lys Cys Glu
      155             160             165
Ile Gly Trp Ala Tyr Tyr Cys Thr Gly Ala Gly Ala Thr Ala Ala
      170             175             180
Met Leu Leu Cys Thr Trp Leu Ala Cys Phe Ser Gly Lys Lys Gln
      185             190             195
Lys His Tyr Pro Tyr
      200

```

<210> 114

<211> 225  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <223> Incyte Clone No: 2093492

<400> 114

```

Met Gly Phe Arg Leu Glu Gly Ile Phe Pro Ala Ala Leu Leu Pro
 1           5           10           15
Leu Leu Leu Thr Met Ile Leu Phe Leu Gly Pro Leu Met Gln Leu
 20           25           30
Ser Met Asp Cys Pro Cys Asp Leu Ala Asp Gly Leu Lys Val Val
 35           40           45
Leu Ala Pro Arg Ser Trp Ala Arg Cys Leu Thr Asp Met Arg Trp
 50           55           60
Leu Arg Asn Gln Val Ile Ala Pro Leu Thr Glu Glu Leu Val Phe
 65           70           75
Arg Ala Cys Met Leu Pro Met Leu Ala Pro Cys Met Gly Leu Gly
 80           85           90
Pro Ala Val Phe Thr Cys Pro Leu Phe Phe Gly Val Ala His Phe
 95           100          105
His His Ile Ile Glu Gln Leu Arg Phe Arg Gln Ser Ser Val Gly
 110          115          120
Asn Ile Phe Leu Ser Ala Ala Phe Gln Phe Ser Tyr Thr Ala Val
 125          130          135
Phe Gly Ala Tyr Thr Ala Phe Leu Phe Ile Arg Thr Gly His Leu
 140          145          150
Ile Gly Pro Val Leu Cys His Ser Phe Cys Asn Tyr Met Gly Phe
 155          160          165
Pro Ala Val Cys Ala Ala Leu Glu His Pro Gln Arg Arg Pro Leu
 170          175          180
Leu Ala Gly Tyr Ala Leu Gly Val Gly Leu Phe Leu Leu Leu Leu
 185          190          195
Gln Pro Leu Thr Asp Pro Lys Leu Tyr Gly Ser Leu Pro Leu Cys
 200          205          210
Val Leu Leu Glu Arg Ala Gly Asp Ser Glu Ala Pro Leu Cys Ser
 215          220          225

```

<210> 115  
 <211> 155  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <223> Incyte Clone No: 2108789

<400> 115

```

Met Ser Gly Leu Leu Ile Pro Pro Leu Pro Gly Trp Val Leu Gly
 1           5           10           15
Pro Leu Met Trp Ala Cys Arg Pro Pro Gln Asp Glu Pro Ser Gly
 20           25           30

```



```

Thr Asp Pro Pro Pro Pro Arg Leu Gln Pro His His Val Ser Gly
      35              40              45
Leu Gly Leu Gly Gln Ala Trp Ala Gln Ser Trp Ala Pro Arg Gly
      50              55              60
Ser Pro Pro Leu Thr Trp Leu Leu Pro Thr Leu Pro Leu Lys Asp
      65              70              75
Gly Pro Ala Ala Arg Leu Pro Pro Pro Pro His Thr Thr Leu Gly
      80              85              90
Gly Leu Ser His Pro Pro Gln Pro Arg Ser Ala Gln Thr Asp Pro
      95              100             105
His Ser Ile Pro Arg Pro Ala Ala Gln Val Arg Gly Pro Val Leu
      110             115             120
Pro Gly Ala Trp Ala Thr Pro Tyr Ala Ile Ser Ser Glu Gln Pro
      125             130             135
Gly Pro Thr Asp Pro His Ala Leu Ser Tyr Val Pro Phe Ser Pro
      140             145             150
Asp Phe Phe Cys Thr
      155

```

```

<210> 116
<211> 468
<212> PRT
<213> Homo sapiens

```

```

<220>
<221> misc_feature
<223> Incyte Clone No: 2171401

```

```

<400> 116
Met Gly Arg Gly Trp Gly Phe Leu Phe Gly Leu Leu Gly Ala Val
  1           5           10           15
Trp Leu Leu Ser Ser Gly His Gly Glu Glu Gln Pro Pro Glu Thr
  20           25           30
Ala Ala Gln Arg Cys Phe Cys Gln Val Ser Gly Tyr Leu Asp Asp
  35           40           45
Cys Thr Cys Asp Val Glu Thr Ile Asp Arg Phe Asn Asn Tyr Arg
  50           55           60
Leu Phe Pro Arg Leu Gln Lys Leu Leu Glu Ser Asp Tyr Phe Arg
  65           70           75
Tyr Tyr Lys Val Asn Leu Lys Arg Pro Cys Pro Phe Trp Asn Asp
  80           85           90
Ile Ser Gln Cys Gly Arg Arg Asp Cys Ala Val Lys Pro Cys Gln
  95           100          105
Ser Asp Glu Val Pro Asp Gly Ile Lys Ser Ala Ser Tyr Lys Tyr
  110          115          120
Ser Glu Glu Ala Asn Asn Leu Ile Glu Glu Cys Glu Gln Ala Glu
  125          130          135
Arg Leu Gly Ala Val Asp Glu Ser Leu Ser Glu Glu Thr Gln Lys
  140          145          150
Ala Val Leu Gln Trp Thr Lys His Asp Asp Ser Ser Asp Asn Phe
  155          160          165
Cys Glu Ala Asp Asp Ile Gln Ser Pro Glu Ala Glu Tyr Val Asp
  170          175          180
Leu Leu Leu Asn Pro Glu Arg Tyr Thr Gly Tyr Lys Gly Pro Asp

```

185	190	195
Ala Trp Lys Ile Trp Asn Val Ile Tyr Glu Glu Asn Cys Phe Lys		
200	205	210
Pro Gln Thr Ile Lys Arg Pro Leu Asn Pro Leu Ala Ser Gly Gln		
215	220	225
Gly Thr Ser Glu Glu Asn Thr Phe Tyr Ser Trp Leu Glu Gly Leu		
230	235	240
Cys Val Glu Lys Arg Ala Phe Tyr Arg Leu Ile Ser Gly Leu His		
245	250	255
Ala Ser Ile Asn Val His Leu Ser Ala Arg Tyr Leu Leu Gln Glu		
260	265	270
Thr Trp Leu Glu Lys Lys Trp Gly His Asn Ile Thr Glu Phe Gln		
275	280	285
Gln Arg Phe Asp Gly Ile Leu Thr Glu Gly Glu Gly Pro Arg Arg		
290	295	300
Leu Lys Asn Leu Tyr Phe Leu Tyr Leu Ile Glu Leu Arg Ala Leu		
305	310	315
Ser Lys Val Leu Pro Phe Phe Glu Arg Pro Asp Phe Gln Leu Phe		
320	325	330
Thr Gly Asn Lys Ile Gln Asp Glu Glu Asn Lys Met Leu Leu Leu		
335	340	345
Glu Ile Leu His Glu Ile Lys Ser Phe Pro Leu His Phe Asp Glu		
350	355	360
Asn Ser Phe Phe Ala Gly Asp Lys Lys Glu Ala His Lys Leu Lys		
365	370	375
Glu Asp Phe Arg Leu His Phe Arg Asn Ile Ser Arg Ile Met Asp		
380	385	390
Cys Val Gly Cys Phe Lys Cys Arg Leu Trp Gly Lys Leu Gln Thr		
395	400	405
Gln Gly Leu Gly Thr Ala Leu Lys Ile Leu Phe Ser Glu Lys Leu		
410	415	420
Ile Ala Asn Met Pro Glu Ser Gly Pro Ser Tyr Glu Phe His Leu		
425	430	435
Thr Arg Gln Glu Ile Val Ser Leu Phe Asn Ala Phe Gly Arg Ile		
440	445	450
Ser Thr Ser Val Lys Glu Leu Glu Asn Phe Arg Asn Leu Leu Gln		
455	460	465
Asn Ile His		

<210> 117  
 <211> 403  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <223> Incyte Clone No: 2212530

<400> 117  
 Met Ser Thr Ser Thr Ser Pro Ala Ala Met Leu Leu Arg Arg Leu  
 1 5 10 15  
 Arg Arg Leu Ser Trp Gly Ser Thr Ala Val Gln Leu Phe Ile Leu  
 20 25 30  
 Thr Val Val Thr Phe Gly Leu Leu Ala Pro Leu Ala Cys His Arg

	35	40	45
Leu Leu His Ser Tyr Phe Tyr Leu Arg His Trp His Leu Asn Gln			
	50	55	60
Met Ser Gln Glu Phe Leu Gln Gln Ser Leu Lys Glu Gly Glu Ala			
	65	70	75
Ala Leu His Tyr Phe Glu Glu Leu Pro Ser Ala Asn Gly Ser Val			
	80	85	90
Pro Ile Val Trp Gln Ala Thr Pro Arg Pro Trp Leu Val Ile Thr			
	95	100	105
Ile Ile Thr Val Asp Arg Gln Pro Gly Phe His Tyr Val Leu Gln			
	110	115	120
Val Val Ser Gln Phe His Arg Leu Leu Gln Gln Cys Gly Pro Gln			
	125	130	135
Cys Glu Gly His Gln Leu Phe Leu Cys Asn Val Glu Arg Ser Val			
	140	145	150
Ser His Phe Asp Ala Lys Leu Leu Ser Lys Tyr Val Pro Val Ala			
	155	160	165
Asn Arg Tyr Glu Gly Thr Glu Asp Asp Tyr Gly Asp Asp Pro Ser			
	170	175	180
Thr Asn Ser Phe Glu Lys Glu Lys Gln Asp Tyr Val Tyr Cys Leu			
	185	190	195
Glu Ser Ser Leu Gln Thr Tyr Asn Pro Asp Tyr Val Leu Met Val			
	200	205	210
Glu Asp Asp Ala Val Pro Glu Glu Gln Ile Phe Pro Val Leu Glu			
	215	220	225
His Leu Leu Arg Ala Arg Phe Ser Glu Pro His Leu Arg Asp Ala			
	230	235	240
Leu Tyr Leu Lys Leu Tyr His Pro Glu Arg Leu Gln His Tyr Ile			
	245	250	255
Asn Pro Glu Pro Met Arg Ile Leu Glu Trp Val Gly Val Gly Met			
	260	265	270
Leu Leu Gly Pro Leu Leu Thr Trp Ile Tyr Met Arg Phe Ala Ser			
	275	280	285
Arg Pro Gly Phe Ser Trp Pro Val Met Leu Phe Phe Ser Leu Tyr			
	290	295	300
Ser Met Gly Leu Val Glu Leu Val Gly Arg His Tyr Phe Leu Glu			
	305	310	315
Leu Arg Arg Leu Ser Pro Ser Leu Tyr Ser Val Val Pro Ala Ser			
	320	325	330
Gln Cys Cys Thr Pro Ala Met Leu Phe Pro Ala Pro Ala Ala Arg			
	335	340	345
Arg Thr Leu Thr Tyr Leu Ser Gln Val Tyr Cys His Lys Gly Phe			
	350	355	360
Gly Lys Asp Met Ala Leu Tyr Ser Leu Leu Arg Ala Lys Gly Glu			
	365	370	375
Arg Ala Tyr Val Val Glu Pro Asn Leu Val Lys His Ile Gly Leu			
	380	385	390
Phe Ser Ser Leu Arg Tyr Asn Phe His Pro Ser Leu Leu			
	395	400	

<210> 118  
 <211> 131  
 <212> PRT  
 <213> Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;223&gt; Incyte Clone No: 2253036

&lt;400&gt; 118

```

Met Glu Arg Cys Phe His Cys Phe Pro Val His Leu Val Phe Asn
 1           5           10           15
Leu Val Gln Ser Phe Ser Pro Ile Ser Gly Val Glu Ser Cys Leu
 20           25           30
Leu Pro Gln Cys Asp Lys Cys Trp Pro Met Val Tyr Arg Ser Cys
 35           40           45
Asp Ala Ser Arg Gly Leu Val Asn Ala Cys Ile Leu Gly Phe Val
 50           55           60
Leu Leu Glu Cys Ser Phe Val Gly Ala Leu Asn Asn Tyr Val Arg
 65           70           75
Ser Leu Ala Thr Leu Leu Glu Arg Thr His Gly Gly Lys Arg Leu
 80           85           90
Lys Leu Cys Glu Glu Ser Gln Ala Ser His Pro Ser Phe Ser Ala
 95           100          105
Glu Pro Arg His Gln Pro Thr Cys Gln Leu Asn Ala Thr Val Arg
 110          115          120
Val Ile Thr Ser Lys Ile Thr Arg Lys Thr Thr
 125          130

```

&lt;210&gt; 119

&lt;211&gt; 556

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;223&gt; Incyte Clone No: 2280161

&lt;400&gt; 119

```

Met Ala Ala Ala Trp Leu Gln Val Leu Pro Val Ile Leu Leu
 1           5           10           15
Leu Leu Gly Ala His Pro Ser Pro Leu Ser Phe Phe Ser Ala Gly
 20           25           30
Pro Ala Thr Val Ala Ala Ala Asp Arg Ser Lys Trp His Ile Pro
 35           40           45
Ile Pro Ser Gly Lys Asn Tyr Phe Ser Phe Gly Lys Ile Leu Phe
 50           55           60
Arg Asn Thr Thr Ile Phe Leu Lys Phe Asp Gly Glu Pro Cys Asp
 65           70           75
Leu Ser Leu Asn Ile Thr Trp Tyr Leu Lys Ser Ala Asp Cys Tyr
 80           85           90
Asn Glu Ile Tyr Asn Phe Lys Ala Glu Glu Val Glu Leu Tyr Leu
 95           100          105
Glu Lys Leu Lys Glu Lys Arg Gly Leu Ser Gly Lys Tyr Gln Thr
 110          115          120
Ser Ser Lys Leu Phe Gln Asn Cys Ser Glu Leu Phe Lys Thr Gln
 125          130          135
Thr Phe Ser Gly Asp Phe Met His Arg Leu Pro Leu Leu Gly Glu
 140          145          150

```

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<210> 120  
 <211> 514  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <223> Incyte Clone No: 2287485

<400> 120  
 Met Ser Trp Pro Arg Arg Leu Leu Leu Arg Tyr Leu Phe Pro Ala  
 1 5 10 15  
 Leu Leu Leu His Gly Leu Gly Glu Gly Ser Ala Leu Leu His Pro  
 20 25 30  
 Asp Ser Arg Ser His Pro Arg Ser Leu Glu Lys Ser Ala Trp Arg  
 35 40 45  
 Ala Phe Lys Glu Ser Gln Cys His His Met Leu Lys His Leu His  
 50 55 60  
 Asn Gly Ala Arg Ile Thr Val Gln Met Pro Pro Thr Ile Glu Gly  
 65 70 75  
 His Trp Val Ser Thr Gly Cys Glu Val Arg Ser Gly Pro Glu Phe  
 80 85 90  
 Ile Thr Arg Ser Tyr Arg Phe Tyr His Asn Asn Thr Phe Lys Ala  
 95 100 105  
 Tyr Gln Phe Tyr Tyr Gly Ser Asn Arg Cys Thr Asn Pro Thr Tyr  
 110 115 120  
 Thr Leu Ile Ile Arg Gly Lys Ile Arg Leu Arg Gln Ala Ser Trp  
 125 130 135  
 Ile Ile Arg Gly Gly Thr Glu Ala Asp Tyr Gln Leu His Asn Val  
 140 145 150  
 Gln Val Ile Cys His Thr Glu Ala Val Ala Glu Lys Leu Gly Gln  
 155 160 165  
 Gln Val Asn Arg Thr Cys Pro Gly Phe Leu Ala Asp Gly Gly Pro  
 170 175 180  
 Trp Val Gln Asp Val Ala Tyr Asp Leu Trp Arg Glu Glu Asn Gly  
 185 190 195  
 Cys Glu Cys Thr Lys Ala Val Asn Phe Ala Met His Glu Leu Gln  
 200 205 210  
 Leu Ile Arg Val Glu Lys Gln Tyr Leu His His Asn Leu Asp His  
 215 220 225  
 Leu Val Glu Glu Leu Phe Leu Gly Asp Ile His Thr Asp Ala Thr  
 230 235 240  
 Gln Arg Met Phe Tyr Arg Pro Ser Ser Tyr Gln Pro Pro Leu Gln  
 245 250 255  
 Asn Ala Lys Asn His Asp His Ala Cys Ile Ala Cys Arg Ile Ile  
 260 265 270  
 Tyr Arg Ser Asp Glu His His Pro Pro Ile Leu Pro Pro Lys Ala  
 275 280 285  
 Asp Leu Thr Ile Gly Leu His Gly Glu Trp Val Ser Gln Arg Cys  
 290 295 300  
 Glu Val Arg Pro Glu Val Leu Phe Leu Thr Arg His Phe Ile Phe  
 305 310 315  
 His Asp Asn Asn Asn Thr Trp Glu Gly His Tyr Tyr His Tyr Ser  
 320 325 330  
 Asp Pro Val Cys Lys His Pro Thr Phe Ser Ile Tyr Ala Arg Gly  
 335 340 345

```

Arg Tyr Ser Arg Gly Val Leu Ser Ser Arg Val Met Gly Gly Thr
350 355 360
Glu Phe Val Phe Lys Val Asn His Met Lys Val Thr Pro Met Asp
365 370 375
Ala Ala Thr Ala Ser Leu Leu Asn Val Phe Asn Gly Asn Glu Cys
380 385 390
Gly Ala Glu Gly Ser Trp Gln Val Gly Ile Gln Gln Asp Val Thr
395 400 405
His Thr Asn Gly Cys Val Ala Leu Gly Ile Lys Leu Pro His Thr
410 415 420
Glu Tyr Glu Ile Phe Lys Met Glu Gln Asp Ala Arg Gly Arg Tyr
425 430 435
Leu Leu Phe Asn Gly Gln Arg Pro Ser Asp Gly Ser Ser Pro Asp
440 445 450
Arg Pro Glu Lys Arg Ala Thr Ser Tyr Gln Met Pro Leu Val Gln
455 460 465
Cys Ala Ser Ser Ser Pro Arg Ala Glu Asp Leu Ala Glu Asp Ser
470 475 480
Gly Ser Ser Leu Tyr Gly Arg Ala Pro Gly Arg His Thr Trp Ser
485 490 495
Leu Leu Leu Ala Ala Leu Ala Cys Leu Val Pro Leu Leu His Trp
500 505 510
Asn Ile Arg Arg

```

```

<210> 121
<211> 109
<212> PRT
<213> Homo sapiens

```

```

<220>
<221> misc_feature
<223> Incyte Clone No: 2380344

```

```

<400> 121
Met Leu Trp Trp Leu Val Leu Leu Leu Pro Thr Leu Lys Ser
1 5 10 15
Val Phe Cys Ser Leu Val Thr Ser Leu Tyr Leu Pro Asn Thr Glu
20 25 30
Asp Leu Ser Leu Trp Leu Trp Pro Lys Pro Asp Leu His Ser Gly
35 40 45
Thr Arg Thr Glu Val Ser Thr His Thr Val Pro Ser Lys Pro Gly
50 55 60
Thr Ala Ser Pro Cys Trp Pro Leu Ala Gly Ala Val Pro Ser Pro
65 70 75
Thr Val Ser Arg Leu Glu Ala Leu Thr Arg Ala Val Gln Val Ala
80 85 90
Glu Pro Leu Gly Ser Cys Gly Phe Gln Gly Gly Pro Cys Pro Gly
95 100 105
Arg Arg Arg Asp

```

```

<210> 122

```

<211> 431  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <223> Incyte Clone No: 2383171

<400> 122  
 Met Ser Trp Val Gln Ala Thr Leu Leu Ala Arg Gly Leu Cys Arg  
 1 5 10 15  
 Ala Trp Gly Gly Thr Cys Gly Ala Ala Leu Thr Gly Thr Ser Ile  
 20 25 30  
 Ser Gln Val Pro Arg Arg Leu Pro Arg Gly Leu His Cys Ser Ala  
 35 40 45  
 Ala Ala His Ser Ser Glu Gln Ser Leu Val Pro Ser Pro Pro Glu  
 50 55 60  
 Pro Arg Gln Arg Pro Thr Lys Ala Leu Val Pro Phe Glu Asp Leu  
 65 70 75  
 Phe Gly Gln Ala Pro Gly Gly Glu Arg Asp Lys Ala Ser Phe Leu  
 80 85 90  
 Gln Thr Val Gln Lys Phe Ala Glu His Ser Val Arg Lys Arg Gly  
 95 100 105  
 His Ile Asp Phe Ile Tyr Leu Ala Leu Arg Lys Met Arg Glu Tyr  
 110 115 120  
 Gly Val Glu Arg Asp Leu Ala Val Tyr Asn Gln Leu Leu Asn Ile  
 125 130 135  
 Phe Pro Lys Glu Val Phe Arg Pro Arg Asn Ile Ile Gln Arg Ile  
 140 145 150  
 Phe Val His Tyr Pro Arg Gln Gln Glu Cys Gly Ile Ala Val Leu  
 155 160 165  
 Glu Gln Met Glu Asn His Gly Val Met Pro Asn Lys Glu Thr Glu  
 170 175 180  
 Phe Leu Leu Ile Gln Ile Phe Gly Arg Lys Ser Tyr Pro Met Leu  
 185 190 195  
 Lys Leu Val Arg Leu Lys Leu Trp Phe Pro Arg Phe Met Asn Val  
 200 205 210  
 Asn Pro Phe Pro Val Pro Arg Asp Leu Pro Gln Asp Pro Val Glu  
 215 220 225  
 Leu Ala Met Phe Gly Leu Arg His Met Glu Pro Asp Leu Ser Ala  
 230 235 240  
 Arg Val Thr Ile Tyr Gln Val Pro Leu Pro Lys Asp Ser Thr Gly  
 245 250 255  
 Ala Ala Asp Pro Pro Gln Pro His Ile Val Gly Ile Gln Ser Pro  
 260 265 270  
 Asp Gln Gln Ala Ala Leu Ala Arg His Asn Pro Ala Arg Pro Val  
 275 280 285  
 Phe Val Glu Gly Pro Phe Ser Leu Trp Leu Arg Asn Lys Cys Val  
 290 295 300  
 Tyr Tyr His Ile Leu Arg Ala Asp Leu Leu Pro Pro Glu Glu Arg  
 305 310 315  
 Glu Val Glu Glu Thr Pro Glu Glu Trp Asn Leu Tyr Tyr Pro Met  
 320 325 330  
 Gln Leu Asp Leu Glu Tyr Val Arg Ser Gly Trp Asp Asn Tyr Glu  
 335 340 345  
 Phe Asp Ile Asn Glu Val Glu Glu Gly Pro Val Phe Ala Met Cys  
 350 355 360



```

Met Ala Gly Ala His Asp Gln Ala Thr Met Ala Lys Trp Ile Gln
      365                      370                      375
Gly Leu Gln Glu Thr Asn Pro Thr Leu Ala Gln Ile Pro Val Val
      380                      385                      390
Phe Arg Leu Ala Gly Ser Thr Arg Glu Leu Gln Thr Ser Ser Ala
      395                      400                      405
Gly Leu Glu Glu Pro Pro Leu Pro Glu Asp His Gln Glu Glu Asp
      410                      415                      420
Asp Asn Leu Gln Arg Gln Gln Gln Gly Gln Ser
      425                      430

```

```

<210> 123
<211> 142
<212> PRT
<213> Homo sapiens

```

```

<220>
<221> misc_feature
<223> Incyte Clone No: 2396046

```

```

<400> 123
Met Leu Leu Gly Val Arg Ala Val Pro Leu Cys Ser Ala Trp Gln
      1                      5                      10                      15
Gly Ala Val Gly Leu Val Ser Leu Ala Ile Ser Ile Cys Lys His
      20                      25                      30
Gly Leu Ser Ser Gln Gln Asn Leu Val Pro Gly Lys Ser Asn Val
      35                      40                      45
Pro Lys Ala Ser Asp Met Pro Arg Cys Pro Pro Val Phe Gln Ser
      50                      55                      60
Pro Asn Leu Thr Pro Phe Pro His His Thr Lys His Thr Ser Gln
      65                      70                      75
Gly Ser His Leu Gly Val Pro Pro Pro Ala Pro Met Pro Trp Cys
      80                      85                      90
Pro Gln Ala Gln Gly Phe Gly Leu Ser Cys Gln Ser Leu Asp Ala
      95                      100                     105
Phe Glu Gly Gln Leu Gly Cys Gly Trp Gly Val Gln Ala Ala Gly
      110                     115                     120
Glu Pro Arg Leu Arg Ile Ile His Thr Leu Leu Phe Gly Ala Phe
      125                     130                     135
Val Glu Val Ser Arg Ile Pro
      140

```

```

<210> 124
<211> 643
<212> PRT
<213> Homo sapiens

```

```

<220>
<221> misc_feature
<223> Incyte Clone No: 2456587

```

<400> 124  
Met Glu Cys Cys Arg Arg Ala Thr Pro Gly Thr Leu Leu Leu Phe  
1 5 10 15  
Leu Ala Phe Leu Leu Leu Ser Ser Arg Thr Ala Arg Ser Glu Glu  
20 25 30  
Asp Arg Asp Gly Leu Trp Asp Ala Trp Gly Pro Trp Ser Glu Cys  
35 40 45  
Ser Arg Thr Cys Gly Gly Ala Ser Tyr Ser Leu Arg Arg Cys  
50 55 60  
Leu Ser Ser Lys Ser Cys Glu Gly Arg Asn Ile Arg Tyr Arg Thr  
65 70 75  
Cys Ser Asn Val Asp Cys Pro Pro Glu Ala Gly Asp Phe Arg Ala  
80 85 90  
Gln Gln Cys Ser Ala His Asn Asp Val Lys His His Gly Gln Phe  
95 100 105  
Tyr Glu Trp Leu Pro Val Ser Asn Asp Pro Asp Asn Pro Cys Ser  
110 115 120  
Leu Lys Cys Gln Ala Lys Gly Thr Thr Leu Val Val Glu Leu Ala  
125 130 135  
Pro Lys Val Leu Asp Gly Thr Arg Cys Tyr Thr Glu Ser Leu Asp  
140 145 150  
Met Cys Ile Ser Gly Leu Cys Gln Ile Val Gly Cys Asp His Gln  
155 160 165  
Leu Gly Ser Thr Val Lys Glu Asp Asn Cys Gly Val Cys Asn Gly  
170 175 180  
Asp Gly Ser Thr Cys Arg Leu Val Arg Gly Gln Tyr Lys Ser Gln  
185 190 195  
Leu Ser Ala Thr Lys Ser Asp Asp Thr Val Val Ala Ile Pro Tyr  
200 205 210  
Gly Ser Arg His Ile Arg Leu Val Leu Lys Gly Pro Asp His Leu  
215 220 225  
Tyr Leu Glu Thr Lys Thr Leu Gln Gly Thr Lys Gly Glu Asn Ser  
230 235 240  
Leu Ser Ser Thr Gly Thr Phe Leu Val Asp Asn Ser Ser Val Asp  
245 250 255  
Phe Gln Lys Phe Pro Asp Lys Glu Ile Leu Arg Met Ala Gly Pro  
260 265 270  
Leu Thr Ala Asp Phe Ile Val Lys Ile Arg Asn Ser Gly Ser Ala  
275 280 285  
Asp Ser Thr Val Gln Phe Ile Phe Tyr Gln Pro Ile Ile His Arg  
290 295 300  
Trp Arg Glu Thr Asp Phe Phe Pro Cys Ser Ala Thr Cys Gly Gly  
305 310 315  
Gly Tyr Gln Leu Thr Ser Ala Glu Cys Tyr Asp Leu Arg Ser Asn  
320 325 330  
Arg Val Val Ala Asp Gln Tyr Cys His Tyr Tyr Pro Glu Asn Ile  
335 340 345  
Lys Pro Lys Pro Lys Leu Gln Glu Cys Asn Leu Asp Pro Cys Pro  
350 355 360  
Ala Ser Asp Gly Tyr Lys Gln Ile Met Pro Tyr Asp Leu Tyr His  
365 370 375  
Pro Leu Pro Arg Trp Glu Ala Thr Pro Trp Thr Ala Cys Ser Ser  
380 385 390  
Ser Cys Gly Gly Gly Ile Gln Ser Arg Ala Val Ser Cys Val Glu  
395 400 405  
Glu Asp Ile Gln Gly His Val Thr Ser Val Glu Glu Trp Lys Cys  
410 415 420

```

Met Tyr Thr Pro Lys Met Pro Ile Ala Gln Pro Cys Asn Ile Phe
425 430 435
Asp Cys Pro Lys Trp Leu Ala Gln Glu Trp Ser Pro Cys Thr Val
440 445 450
Thr Cys Gly Gln Gly Leu Arg Tyr Arg Val Val Leu Cys Ile Asp
455 460 465
His Arg Gly Met His Thr Gly Gly Cys Ser Pro Lys Thr Lys Pro
470 475 480
His Ile Lys Glu Glu Cys Ile Val Pro Thr Pro Cys Tyr Lys Pro
485 490 495
Lys Glu Lys Leu Pro Val Glu Ala Lys Leu Pro Trp Phe Lys Gln
500 505 510
Ala Gln Glu Leu Glu Glu Gly Ala Ala Val Ser Glu Glu Pro Ser
515 520 525
Phe Ile Pro Glu Ala Trp Ser Ala Cys Thr Val Thr Cys Gly Val
530 535 540
Gly Thr Gln Val Arg Ile Val Arg Cys Gln Val Leu Leu Ser Phe
545 550 555
Ser Gln Ser Val Ala Asp Leu Pro Ile Asp Glu Cys Glu Gly Pro
560 565 570
Lys Pro Ala Ser Gln Arg Ala Cys Tyr Ala Gly Pro Cys Ser Gly
575 580 585
Glu Ile Pro Glu Phe Asn Pro Asp Glu Thr Asp Gly Leu Phe Gly
590 595 600
Gly Leu Gln Asp Phe Asp Glu Leu Tyr Asp Trp Glu Tyr Glu Gly
605 610 615
Phe Thr Lys Cys Ser Glu Ser Cys Gly Gly Gly Val Gln Glu Ala
620 625 630
Val Val Ser Cys Leu Asn Lys Gln Thr Arg Glu Pro Cys
635 640

```

&lt;210&gt; 125

&lt;211&gt; 568

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;223&gt; Incyte Clone No: 2484813

&lt;400&gt; 125

```

Met Val Leu Leu His Trp Cys Leu Leu Trp Leu Leu Phe Pro Leu
1 5 10 15
Ser Ser Arg Thr Gln Lys Leu Pro Thr Arg Asp Glu Glu Leu Phe
20 25 30
Gln Met Gln Ile Arg Asp Lys Ala Phe Phe His Asp Ser Ser Val
35 40 45
Ile Pro Asp Gly Ala Glu Ile Ser Ser Tyr Leu Phe Arg Asp Thr
50 55 60
Pro Lys Arg Tyr Phe Phe Val Val Glu Glu Asp Asn Thr Pro Leu
65 70 75
Ser Val Thr Val Thr Pro Cys Asp Ala Pro Leu Glu Trp Lys Leu
80 85 90
Ser Leu Gln Glu Leu Pro Glu Asp Arg Ser Gly Glu Gly Ser Gly

```

95	100	105
Asp Leu Glu Pro Leu Glu Gln Gln Lys Gln Gln Ile Ile Asn Glu		
110	115	120
Glu Gly Thr Glu Leu Phe Ser Tyr Lys Gly Asn Asp Val Glu Tyr		
125	130	135
Phe Ile Ser Ser Ser Ser Pro Ser Gly Leu Tyr Gln Leu Asp Leu		
140	145	150
Leu Ser Thr Glu Lys Asp Thr His Phe Lys Val Tyr Ala Thr Thr		
155	160	165
Thr Pro Glu Ser Asp Gln Pro Tyr Pro Glu Leu Pro Tyr Asp Pro		
170	175	180
Arg Val Asp Val Thr Ser Leu Gly Arg Thr Thr Val Thr Leu Ala		
185	190	195
Trp Lys Pro Ser Pro Thr Ala Ser Leu Leu Lys Gln Pro Ile Gln		
200	205	210
Tyr Cys Val Val Ile Asn Lys Glu His Asn Phe Lys Ser Leu Cys		
215	220	225
Ala Val Glu Ala Lys Leu Ser Ala Asp Asp Ala Phe Met Met Ala		
230	235	240
Pro Lys Pro Gly Leu Asp Phe Ser Pro Phe Asp Phe Ala His Phe		
245	250	255
Gly Phe Pro Ser Asp Asn Ser Gly Lys Glu Arg Ser Phe Gln Ala		
260	265	270
Lys Pro Ser Pro Lys Leu Gly Arg His Val Tyr Ser Arg Pro Lys		
275	280	285
Val Asp Ile Gln Lys Ile Cys Ile Gly Asn Lys Asn Ile Phe Thr		
290	295	300
Val Ser Asp Leu Lys Pro Asp Thr Gln Tyr Tyr Phe Asp Val Phe		
305	310	315
Val Val Asn Ile Asn Ser Asn Met Ser Thr Ala Tyr Val Gly Thr		
320	325	330
Phe Ala Arg Thr Lys Glu Glu Ala Lys Gln Lys Thr Val Glu Leu		
335	340	345
Lys Asp Gly Lys Ile Thr Asp Val Phe Val Lys Arg Lys Gly Ala		
350	355	360
Lys Phe Leu Arg Phe Ala Pro Val Ser Ser His Gln Lys Val Thr		
365	370	375
Phe Phe Ile His Ser Cys Leu Asp Ala Val Gln Ile Gln Val Arg		
380	385	390
Arg Asp Gly Lys Leu Leu Leu Ser Gln Asn Val Glu Gly Ile Gln		
395	400	405
Gln Phe Gln Leu Arg Gly Lys Pro Lys Ala Lys Tyr Leu Val Arg		
410	415	420
Leu Lys Gly Asn Lys Lys Gly Ala Ser Met Leu Lys Ile Leu Ala		
425	430	435
Thr Thr Arg Pro Thr Lys Gln Ser Phe Pro Ser Leu Pro Glu Asp		
440	445	450
Thr Arg Ile Lys Ala Phe Asp Lys Leu Arg Thr Cys Ser Ser Ala		
455	460	465
Thr Val Ala Trp Leu Gly Thr Gln Glu Arg Asn Lys Phe Cys Ile		
470	475	480
Tyr Lys Lys Glu Val Asp Asp Asn Tyr Asn Glu Asp Gln Lys Lys		
485	490	495
Arg Glu Gln Asn Gln Cys Leu Gly Pro Asp Ile Arg Lys Lys Ser		
500	505	510
Glu Lys Val Leu Cys Lys Tyr Phe His Ser Gln Asn Leu Gln Lys		
515	520	525

Ala Val Thr Thr Glu Thr Ile Lys Gly Leu Gln Pro Gly Lys Ser  
 530 535 540  
 Tyr Leu Leu Asp Val Tyr Val Ile Gly His Gly Gly His Ser Val  
 545 550 555  
 Lys Tyr Gln Ser Lys Val Val Lys Thr Arg Lys Phe Cys  
 560 565

<210> 126  
 <211> 125  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <223> Incyte Clone No: 2493851

<400> 126  
 Met Trp Leu Val Gly Pro Ser Phe Leu Ser Cys Pro Leu Gly Lys  
 1 5 10 15  
 Val Pro Pro Ala Gly Leu Leu Leu Ala Gly Ser Ser Gly Arg Gly  
 20 25 30  
 Ala Arg Arg Pro Ala Thr Pro Arg His Trp Ser Ser Thr Thr Pro  
 35 40 45  
 Gly Leu Arg Leu Glu Ala Pro Leu Cys Gln Leu Cys Pro Leu Gly  
 50 55 60  
 Gly Thr Arg Gln Asp Cys Gln Pro Leu Ser Trp Gln Val Thr Ser  
 65 70 75  
 Ala Phe Lys Leu Thr Val Pro Ser Pro Phe His Ala Pro Pro Arg  
 80 85 90  
 Ser Trp Ser Cys Leu Leu Leu Gly Ile Phe Pro Gly Gln Ala Leu  
 95 100 105  
 Ala Leu Glu Pro Trp His Leu Phe Leu Gly Ser Met Leu Pro Arg  
 110 115 120  
 Cys Asp Gly Glu Cys  
 125

<210> 127  
 <211> 196  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <223> Incyte Clone No: 2495719

<400> 127  
 Met Ala Ala Leu Lys Ala Leu Val Ser Gly Cys Gly Arg Leu Leu  
 1 5 10 15  
 Arg Gly Leu Leu Ala Gly Pro Ala Ala Thr Ser Trp Ser Arg Leu  
 20 25 30  
 Pro Ala Arg Gly Phe Arg Glu Val Val Glu Thr Gln Glu Gly Lys

```

      35      40      45
Thr Thr Ile Ile Glu Gly Arg Ile Thr Ala Thr Pro Lys Glu Ser
      50      55      60
Pro Asn Pro Pro Asn Pro Ser Gly Gln Cys Pro Ile Cys Arg Trp
      65      70      75
Asn Leu Lys His Lys Tyr Asn Tyr Asp Asp Val Leu Leu Leu Ser
      80      85      90
Gln Phe Ile Arg Pro His Gly Gly Met Leu Pro Arg Lys Ile Thr
      95     100     105
Gly Leu Cys Gln Glu Glu His Arg Lys Ile Glu Glu Cys Val Lys
     110     115     120
Met Ala His Arg Ala Gly Leu Leu Pro Asn His Arg Pro Arg Leu
     125     130     135
Pro Glu Gly Val Val Pro Lys Ser Lys Pro Gln Leu Asn Arg Tyr
     140     145     150
Leu Thr Arg Trp Ala Pro Gly Ser Val Lys Pro Ile Tyr Lys Lys
     155     160     165
Gly Pro Arg Trp Asn Arg Val Arg Met Pro Val Gly Ser Pro Leu
     170     175     180
Leu Arg Asp Asn Val Cys Tyr Ser Arg Thr Pro Trp Lys Leu Tyr
     185     190     195
His

```

<210> 128  
 <211> 214  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <223> Incyte Clone No: 2614153

```

<400> 128
Met Val Leu Gly Gly Cys Pro Val Ser Tyr Leu Leu Leu Cys Gly
  1      5      10      15
Gln Ala Ala Leu Leu Leu Gly Asn Leu Leu Leu His Cys Val
  20      25      30
Ser Arg Ser His Ser Gln Asn Ala Thr Ala Glu Pro Glu Leu Thr
  35      40      45
Ser Ala Gly Ala Ala Gln Pro Glu Gly Pro Gly Gly Ala Ala Ser
  50      55      60
Trp Glu Tyr Gly Asp Pro His Ser Pro Val Ile Leu Cys Ser Tyr
  65      70      75
Leu Pro Asp Glu Phe Ile Glu Cys Glu Asp Pro Val Asp His Val
  80      85      90
Gly Asn Ala Thr Ala Ser Gln Glu Leu Gly Tyr Gly Cys Leu Lys
  95     100     105
Phe Gly Gly Gln Ala Tyr Ser Asp Val Glu His Thr Ser Val Gln
  110     115     120
Cys His Ala Leu Asp Gly Ile Glu Cys Ala Ser Pro Arg Thr Phe
  125     130     135
Leu Arg Glu Asn Lys Pro Cys Ile Lys Tyr Thr Gly His Tyr Phe
  140     145     150
Ile Thr Thr Leu Leu Tyr Ser Phe Phe Leu Gly Cys Phe Gly Val

```

	155	160	165
Asp Arg Phe Cys	Leu Gly His Thr Gly	Thr Ala Val Gly Lys	Leu
	170	175	180
Leu Thr Leu Gly	Gly Leu Gly Ile Trp	Trp Phe Val Asp Leu	Ile
	185	190	195
Leu Leu Ile Thr	Gly Gly Leu Met Pro	Ser Asp Gly Ser Asn	Trp
	200	205	210
Cys Thr Val Tyr			

<210> 129  
 <211> 88  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <223> Incyte Clone No: 2655184

<400> 129	
Met Ala Cys Phe Ser Phe Phe Leu Cys Phe Leu Val His Leu Leu	
1 5 10 15	
Ile Lys Met Asn Pro Val Thr Glu Ser Pro Ser Cys Leu Phe Ser	
20 25 30	
Pro Pro Ser Glu Ser Ala Leu Ala Ser Gln Leu Ala Leu Ser Ala	
35 40 45	
Ser Cys Asp Gln Arg Ala Pro Phe Ser Leu Ala Gly Val Val Ser	
50 55 60	
His Asp Pro Gly Trp Pro Val Val Arg Leu His Arg Pro Leu Val	
65 70 75	
Pro Glu His Ala Val Phe Ser Gln Pro Ser Leu Gln Pro	
80 85	

<210> 130  
 <211> 260  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <223> Incyte Clone No: 2848362

<400> 130	
Met Pro Asp Pro Leu Phe Ser Ala Val Gln Gly Lys Asp Glu Ile	
1 5 10 15	
Leu His Lys Ala Leu Cys Phe Cys Pro Trp Leu Gly Lys Gly Gly	
20 25 30	
Met Glu Pro Leu Arg Leu Leu Ile Leu Leu Phe Val Thr Glu Leu	
35 40 45	
Ser Gly Ala His Asn Thr Thr Val Phe Gln Gly Val Ala Gly Gln	
50 55 60	
Ser Leu Gln Val Ser Cys Pro Tyr Asp Ser Met Lys His Trp Gly	

	65		70		75
Arg Arg Lys Ala Trp Cys Arg Gln Leu Gly Glu Lys Gly Pro Cys					
	80		85		90
Gln Arg Val Val Ser Thr His Asn Leu Trp Leu Leu Ser Phe Leu					
	95		100		105
Arg Arg Trp Asn Gly Ser Thr Ala Ile Thr Asp Asp Thr Leu Gly					
	110		115		120
Gly Thr Leu Thr Ile Thr Leu Arg Asn Leu Gln Pro His Asp Ala					
	125		130		135
Gly Leu Tyr Gln Cys Gln Ser Leu His Gly Ser Glu Ala Asp Thr					
	140		145		150
Leu Arg Lys Val Leu Val Glu Val Leu Ala Asp Pro Leu Asp His					
	155		160		165
Arg Asp Ala Gly Asp Leu Trp Phe Pro Gly Glu Ser Glu Ser Phe					
	170		175		180
Glu Asp Ala His Val Glu His Ser Ile Ser Arg Ser Leu Leu Glu					
	185		190		195
Gly Glu Ile Pro Phe Pro Pro Thr Ser Ile Leu Leu Leu Leu Ala					
	200		205		210
Cys Ile Phe Leu Ile Lys Ile Leu Ala Ala Ser Ala Leu Trp Ala					
	215		220		225
Ala Ala Trp His Gly Gln Lys Pro Gly Thr His Pro Pro Ser Glu					
	230		235		240
Leu Asp Cys Gly His Asp Pro Gly Tyr Gln Leu Gln Thr Leu Pro					
	245		250		255
Gly Leu Arg Asp Thr					
	260				

<210> 131  
 <211> 295  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <223> Incyte Clone No: 2849906

<400> 131
Met Gly Leu Pro Val Ser Trp Ala Pro Pro Ala Leu Trp Val Leu
1 5 10 15
Gly Cys Cys Ala Leu Leu Leu Ser Leu Trp Ala Leu Cys Thr Ala
20 25 30
Cys Arg Arg Pro Glu Asp Ala Val Ala Pro Arg Lys Arg Ala Arg
35 40 45
Arg Gln Arg Ala Arg Leu Gln Gly Ser Ala Thr Ala Ala Glu Ala
50 55 60
Ser Leu Leu Arg Arg Thr His Leu Cys Ser Leu Ser Lys Ser Asp
65 70 75
Thr Arg Leu His Glu Leu His Arg Gly Pro Arg Ser Ser Arg Ala
80 85 90
Leu Arg Pro Ala Ser Met Asp Leu Leu Arg Pro His Trp Leu Glu
95 100 105
Val Ser Arg Asp Ile Thr Gly Pro Gln Ala Ala Pro Ser Ala Phe
110 115 120



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Pro His Gln Glu Leu Pro Arg Ala Leu Pro Ala Ala Ala Ala Thr
125 130 135
Ala Gly Cys Ala Gly Leu Glu Ala Thr Tyr Ser Asn Val Gly Leu
140 145 150
Ala Ala Leu Pro Gly Val Ser Leu Ala Ala Ser Pro Val Val Ala
155 160 165
Glu Tyr Ala Arg Val Gln Lys Arg Lys Gly Thr His Arg Ser Pro
170 175 180
Gln Glu Pro Gln Gln Gly Lys Thr Glu Val Thr Pro Ala Ala Gln
185 190 195
Val Asp Val Leu Tyr Ser Arg Val Cys Lys Pro Lys Arg Arg Asp
200 205 210
Pro Gly Pro Thr Thr Asp Pro Leu Asp Pro Lys Gly Gln Gly Ala
215 220 225
Ile Leu Ala Leu Ala Gly Asp Leu Ala Tyr Gln Thr Leu Pro Leu
230 235 240
Arg Ala Leu Asp Val Asp Ser Gly Pro Leu Glu Asn Val Tyr Glu
245 250 255
Ser Ile Arg Glu Leu Gly Asp Pro Ala Gly Arg Ser Ser Thr Cys
260 265 270
Gly Ala Gly Thr Pro Pro Ala Ser Ser Cys Pro Ser Leu Gly Arg
275 280 285
Gly Trp Arg Pro Leu Pro Ala Ser Leu Pro
290 295

```

```

<210> 132
<211> 183
<212> PRT
<213> Homo sapiens

```

```

<220>
<221> misc_feature
<223> Incyte Clone No: 2899137

```

```

<400> 132
Met Ala Ala Ser Met Ala Arg Gly Gly Val Ser Ala Arg Val Leu
1 5 10 15
Leu Gln Ala Ala Arg Gly Thr Trp Trp Asn Arg Pro Gly Gly Thr
20 25 30
Ser Gly Ser Gly Glu Gly Val Ala Leu Gly Thr Thr Arg Lys Phe
35 40 45
Gln Ala Thr Gly Ser Arg Pro Ala Gly Glu Glu Asp Ala Gly Gly
50 55 60
Pro Glu Arg Pro Gly Asp Val Val Asn Val Val Phe Val Asp Arg
65 70 75
Ser Gly Gln Arg Ile Pro Val Ser Gly Arg Val Gly Asp Asn Val
80 85 90
Leu His Leu Ala Gln Arg His Gly Val Asp Leu Glu Gly Ala Cys
95 100 105
Glu Ala Ser Leu Ala Cys Ser Thr Cys His Val Tyr Val Ser Glu
110 115 120
Asp His Leu Asp Leu Leu Pro Pro Pro Glu Glu Arg Glu Asp Asp
125 130 135
Met Leu Asp Met Ala Pro Leu Leu Gln Glu Asn Ser Arg Leu Gly

```

```

          140          145          150
Cys Gln Ile Val Leu Thr Pro Glu Leu Glu Gly Ala Glu Phe Thr
          155          160          165
Leu Pro Lys Ile Thr Arg Asn Phe Tyr Val Asp Gly His Val Pro
          170          175          180
Lys Pro His

```

```

<210> 133
<211> 113
<212> PRT
<213> Homo sapiens

```

```

<220>
<221> misc_feature
<223> Incyte Clone No: 2986229

```

```

<400> 133
Met Trp Arg Lys Pro Asp Val Leu Tyr Ser Val Ile Pro Val Thr
  1          5          10          15
Ser Leu Phe Phe Leu Leu Ala Leu Asn Leu Pro Asp Val Phe Gly
          20          25          30
Leu Val Val Leu Pro Leu Glu Leu Lys Leu Arg Ile Phe Arg Leu
          35          40          45
Leu Asp Val Arg Ser Val Leu Ser Leu Ser Ala Val Cys Arg Asp
          50          55          60
Leu Phe Thr Ala Ser Asn Asp Pro Leu Leu Trp Arg Phe Leu Tyr
          65          70          75
Leu Arg Asp Phe Arg Gly Asp Phe Arg Asn Asp Ile Phe Thr Arg
          80          85          90
Lys Gly Ser Tyr Cys Leu Asp Tyr Ser Ala His Gln Lys Phe Leu
          95          100          105
Val Val Gly Phe Phe Cys Cys Lys
          110

```

```

<210> 134
<211> 160
<212> PRT
<213> Homo sapiens

```

```

<220>
<221> misc_feature
<223> Incyte Clone No: 3222081

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```

<400> 134
Met Gln Arg Val Ser Gly Leu Leu Ser Trp Thr Leu Ser Arg Val
  1          5          10          15
Leu Trp Leu Ser Gly Leu Ser Glu Pro Gly Ala Ala Arg Gln Pro
          20          25          30
Arg Ile Met Glu Glu Lys Ala Leu Glu Val Tyr Asp Leu Ile Arg
          35          40          45
Thr Ile Arg Asp Pro Glu Lys Pro Asn Thr Leu Glu Glu Leu Glu

```

	50		55		60									
Val	Val	Ser	Glu	Ser	Cys	Val	Glu	Val	Gln	Glu	Ile	Asn	Glu	Glu
	65													75
Glu	Tyr	Leu	Val	Ile	Ile	Arg	Phe	Thr	Pro	Thr	Val	Pro	His	Cys
	80													90
Ser	Leu	Ala	Thr	Leu	Ile	Gly	Leu	Cys	Leu	Arg	Val	Lys	Leu	Gln
	95													105
Arg	Cys	Leu	Pro	Phe	Lys	His	Lys	Leu	Glu	Ile	Tyr	Ile	Ser	Glu
	110													120
Gly	Thr	His	Ser	Thr	Glu	Glu	Asp	Ile	Asn	Lys	Gln	Ile	Asn	Asp
	125													135
Lys	Glu	Arg	Val	Ala	Ala	Ala	Met	Glu	Asn	Pro	Asn	Leu	Arg	Glu
	140													150
Ile	Val	Glu	Gln	Cys	Val	Leu	Glu	Pro	Asp					
	155													160

<210> 135  
 <211> 865  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <223> Incyte Clone No: 443531

<400> 135  
 attcctcaat tttccagtct cccttgagct aagtgtggcc ctatgactca cttccagcca 60  
 tgaaaacaag tgcaaatctg ttaggagtat gttctggggc aatttttgct ctcctgatga 120  
 agacaaaggc tgttgatcca ctgaacccac ccagacacta tgtgggttct tgaatgtcct 180  
 acgtacattt tgatggatta cccaaggact atctgatgaa gaataataga gacatataaa 240  
 tacatatggg ctacatcttg gcaaaaataa gtaatcctga agtaaatctt aaggatgttc 300  
 tgaattgaca cctcttaagc acaaccgaat gtctctgtgg ctttgccctc cactgggggt 360  
 ttttggctct tgtttggccc cagcggctgc tgcagctctg tctgaattca cacaggagca 420  
 acatgatggt gctcagccct cgccgaagtg tcttgctgaa gagttgggag atgcttggac 480  
 tattcagata gaagccaact ggaagtacag ggcagtcaac acaaaccaga gaggcaaaact 540  
 tttggccagt gagacatgga aggggagaag aaatacatte ttctttctcc cctagagtga 600  
 ggaccaacct gagtcccagt cacctggaat cccctcagac gagcgtccct tgagatccag 660  
 cacatggcag ccagcgtgct gacgattcct tctgcctac tggctccttc ttatttctgc 720  
 ctccgtggaa ctgtattctc taatcaatat tagcacatac atattgccc agactgtacc 780  
 tcttgggaac ccaggataaa gcactatcta aacattttgt cttggaattg taataaaact 840  
 caaaagaaaa atacaaaaaa aaaaa 865

<210> 136  
 <211> 706  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221>  
 <222> 11, 12  
 <223> a or g or c or t, unknown, or other  
 <220>

&lt;221&gt; misc\_feature

&lt;223&gt; Incyte Clone No: 632860

&lt;400&gt; 136

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eggaccgtgg nnttggtaaa gccattttcc gaggatttta gggagaccta ggtggggcag 60
acactagaag tgtccagcct ccaagcccaa gagatgtggc cggcagggtt gggcagggtcc 120
ttgtctggctc agcctgctct ttgtctcttc atgggacccc agtggatcct gcagttctgc 180
tcttggctgg aaccacgcca gcttcgctgg agctggactg agccgccttt tacattattg 240
gactctctcg ggttgagagc tgcccaggac tcttcagttt tcaccacctt tgttcctttg 300
actcttgact catcattcat gaccgttaac gtggttccat ttgtatggac ttcttctttc 360
ttcagagcat ttcagtatcc tgttacctcc ccatgcagaa caaagaatac tccacttttg 420
atagatgggg ttaccaggat tcaggctaca tggcctgagg caaggtcaca acatgagtga 480
cagaatgtgt cctggaagcc aggcattccc tggggtgtat ttggggcgct caacaaggct 540
tgatcgagct ttgggggttag atctagctat tccatgggga ttcttttcag aattgctgtt 600
ttcggtaact aattccatga ccaggctccat ggcattggat gacattgcgc tacactgttg 660
ctcaccgggg tcaccctccc tcacagggtg gatggcaagc atgttg 706
```

&lt;210&gt; 137

&lt;211&gt; 801

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;223&gt; Incyte Clone No: 670010

&lt;400&gt; 137

```
acttctacat gggcctcctg ctgctggtgc tcttctcag cctcctgccg gtggcctaca 60
ccatcatgtc cctccacccc tcttttgact gggggccgtt cagggtgcaga gtctcagttg 120
ccggggagca cctccccctc cgaggcagtc tgctcagagg gcctcgcccc agaattccag 180
ttctggtttc atgccagcct gtaaaaggcc atggaacttt gggatgaatca ccgatgccat 240
ttaagagggg tttctgccag gatggaaatg ttaggctcgt ctgtgtctgc gctgttcatt 300
tcagttagcca ccagccacct gtggcgttg agtgctttaa atgaggaaat gagaaaatta 360
atttctcatg tatttttctc atttatttat taatttttaa ctgatagttg tacatatttg 420
ggggtacatg tgatatttgg atacatgtat acaatatata atgatcaaat cagggttaact 480
gggatatcca tcacatcaaa catttatttt ttattctttt tagacagagt ctactctgt 540
caccagggt ggagtgcagt ggtgccatct cagcttactg caacctctgc ctgccagggt 600
caagcgatc tcatgcctcc acctcccaag tagctgggac tacaggcatg caccacaatg 660
cccaactaat ttttgtattt ttagtagaga cgggggtttt ccatgttgcc cagggtggcc 720
ttgaactcct ggcctcaaac aatccacttg cctcgccctc ccaaagtgtt atgattacag 780
gogtgagcca ccgtgcctgg g 801
```

&lt;210&gt; 138

&lt;211&gt; 664

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt;

&lt;222&gt; 505, 518, 527, 540, 565, 566

&lt;223&gt; a or g or c or t, unknown, or other

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;223&gt; Incyte Clone No: 726498

```

<400> 138
cggacgcgtg ggctggaagg agctctggag tcggaatcag gatgtggagg ctgagaagaa 60
atctggctct accacctggg aaactggcat ggttgatatt gtacgtgttc agtcagggga 120
gcagagccat gatgagctct acggaataaa ggttaaaaca tatgcttgaa atttggcatg 180
gcagacaagc cagagcttg- gaaaatctaa gaaaccaaac acgtgttagcc accaaagtgg 240
aaccacaaaa gggaagatct acagaaattt gttgccttgc ttagttcca ttaaatgagg 300
ttgtgcagtc aagcatcttg tgggtgggtct ggagctcttg ccagcatcag gaagacaagc 360
tgggtgctaa gtgaagaaat acacaatgta gaaactgtca ggcattctctg cccctggact 420
tcacatatac tgatgatgtt ctgagagtca gggcactgct tcacttttcg cttccaaatc 480
tcacacaaaa ttctctgtta ggcancccca gcttagancc ttacaantga gggggatcan 540
ggaaatggag taccagata cccanngtga tatactttta tgcctcagc ttcttatctt 600
tcagtgggga taatatcttc ggatacaaaa gagtgtacat atataccctg tatttggtaa 660
acta
664

```

```

<210> 139
<211> 1241
<212> DNA
<213> Homo sapiens

```

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<220>
<221> misc_feature
<223> Incyte Clone No: 795064

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<400> 139
ccaggcaata tctcaggata tgggaagtttc tgggtttatt taccctcag tgcacagagt 60
taaagtttca gaagagactt gtgcacataa gggcttcac tcaagtgtat tgcatgaatg 120
gctgaatcgg ggtaacatc ccttccaggc acagcgagtt ggttctgctt tttgcctgta 180
agccaaagaa aagccacatc taaaaagcta ctactaaaag ccagaaagaa aagtggattt 240
gaactcagtg tcacagactc ttctgagtg tttagggtca cagctagtgt aagaggcatg 300
aagaatagac atgcaaaaagg gaacgggtgc accagagacc cctgttttgg ctgacagacc 360
atatgtccca ccagctgggg aatctgacaa gaggacatag gtggcactct ttttttaaag 420
ctatttattg tatctatttt taaataaaat tgcctatcct cattcagctc ttagaacaaa 480
agcaaaaaac cctgtaaatc aggagatata agcacatctg caccagaaat aggccatat 540
gatagggcaa ccctgagctt aaacaatgac atcttcaagg gtagaactaa tctgaaaccc 600
ccttccagcc tctggaagac actggcctgc atcagttaga gtcagagcaa gtgtcacttc 660
acagggaaaa gaaggattat atagacttcc tatccctaga gtttataaat gtcaactata 720
taaaaaaagc tcaaaacagt gttaaaggaa tgaacagtag aatttttaata ggctgtccaa 780
agaagccagg tctgctgttg gcaagtatag cctaacccta gtcttgtaaa ataagccaga 840
aagggttact gagccacctt aagctagtac ctatatagta ggcaaaaagt acagaaatag 900
atgcaataag tgtggtgagt ctttgagcct acgagtcagc ccaccagcca taagttgacc 960
tatcacttga gaacctcttc agcaaaagat ccagaaaaca ttcaatcaag ttggcaaatg 1020
acacagggag ctggccctct gaccatcttc ctggcaaac ttgactggaa gggccatttg 1080
cagcactgtc ctggagctaa tacactgttt cactgcctct gccatataat gatgccagca 1140
ctagccagct ggtgggtatt tggaggaatc ctgcatgagg attgcccaat aaggggcagg 1200
tacacatacc tggcaaaagt atgatgatgt gaattgtttc c
1241

```

```

<210> 140
<211> 750
<212> DNA
<213> Homo sapiens

<220>
<221>
<222> 570, 641
<223> a or g or c or t, unknown, or other

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<220>  
<221> misc\_feature  
<223> Incyte Clone No: 924925

<400> 140  
tggagtgggg agaagagcat acgccaggag cctcctgcc: caaagtgtct cctaagtct 50  
tcttctctct gtgtgacct caggggtgtc tgaccttcc ctgggtgtgg gggatgtgg 120  
cctctcaggt gcccctactt gcttctgtct tccttctggt gaagtcaccc tccaacatta 180  
acctgcccac cccacccccg tcatccctgg agaattccag ctttgtcgt tctcagagag 240  
ggaaatctaag tgtttttggg gggcaaaaaga aagcaacgtt taggtatcac ttctacttgg 300  
accgcatgcc tttttatagc caaatttctg tgtatttctg aaatggattt cgcgttaatg 360  
gatatttatg taataactag acttctcaga ttattgtgag aagggtcagg ttggaagggg 420  
tgtagggaaga cgggtgaggg gtagtttttt tctgtcctag ttttttttt ttttattgtc 480  
atctctgagg tggactttgt cacctgtggt tattggggcc aagtggactc agctccgggg 540  
gagaaggctt ctctgccatt tcggtccaan ggtgacgac acaggcgtag tttttgggac 600  
tgtggaagca tcagatgccca gcactgactt cagaccagca ntccgggcta gaggaagatg 660  
ggacctttca ggaagggaat acctggactt ttcttttggg cctcggaaa cttgggcttt 720  
ctctaccgac ttgcccagat ttcatttcac 750

<210> 141  
<211> 1235  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc\_feature  
<223> Incyte Clone No: 962390

<400> 141  
cctcaggca gcccctccac aggaccctc tcctgcctgg acagctctgc tgggtctccc 60  
gtcccctgga gaagaacaag gccatgggtc ggcccctgct gctgcccctg ctgctcctgc 120  
tgcagccgcc agcatttctg cagcctgggt gctccacagg atctgggtcca agctaccttt 180  
atgggggtcac tcaaccaaaa cacctctcag cctccatggg tggctctgtg gaaatccct 240  
tcctccttcta ttacccttg gagttagcca tagttcccaa cgtgagaata tccctggagac 300  
ggggccactt ccacgggcag tccttctaca gcacaaggcc gccttccatt cacaaggatt 360  
atgtgaaccg gctctttctg aactggacag agggtcagga gagcggttc ctcaggatct 420  
caaacctgcg gaaggaggac cagtctgtgt atttctgccg agtcgagctg gacaccggga 480  
gatcagggag gcagcagttg cagtccatca aggggaccaa actcaccatc acccaggctg 540  
tcacaaccac caccacctgg agggccagca gcacaaccac catagccggc ctcagggtca 600  
cagaaagcaa agggcactca gaatcatggc acctaaagtct ggacactgcc atcagggttg 660  
catttgctgt cgtgtgtctc aaaactgtca ttttgggact gctgtgcctc ctctcctgt 720  
ggtggaggag aaggaaaggt agcaggggcg caagcagtga cttctgacca acagagtgtg 780  
gggagaaggg atgtgtatta gcccggagg acytgatgtg agacccgctt gtgagtcctc 840  
cacactcgtt cccatttggc aagatacatg gagagcacc tgaggacctt taaaaggcaa 900  
agccgcaagg cagaaggagg ctgggtccct gaatcaccga ctggaggaga gttacctaca 960  
agagccttca tccaggagca tccacactgc aatgatatag gaatgaggtc tgaactccac 1020  
tgaattaaac cactggcatt tgggggctgt ttattatagc agtgcaaaaga gttcctttat 1080  
cctccccaag gatggaaaaa tacaatttat tttgcttacc atacaccctt tttctcctcg 1140  
tccacatttt ccaatctgta tgggtgctgt cttctatggc agaaggtttt ggggaataaa 1200  
tagcgtgaaa tgctgctgac acttaaaaaa aaaaa 1235

<210> 142  
<211> 1034  
<212> DNA  
<213> Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;223&gt; Incyte Clone No: 1259405

&lt;400&gt; 142

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gacggaagtg cgggcggagg atccccagcc gggtcccaag cctgtgctg tgcctgagcc 60
tgagcctgag cctgagcccc agccgggagc cggtcgcggg ggctccgggc tgtgggaccg 120
ctgggcccc agcgtgagg accctgtggg gaggccttct tcggcttggc tccttgctca 180
gcctgtctgt cctggcgctt tccgtgctgc tgcctggcgca gctgtcagac gccgccaaga 240
atttcgagga tgcagatgt aaatgtatct gccctcccta taaagaaaat tctgggcata 300
tttataataa gaacatatct cagaaaagatt gtgattgcct tcatgttgtg gagcccatgc 360
ctgtgcgggg gcctgatgta gaagcatact gtctacgctg tgaatgcaaa tatgaagaaa 420
gaagctctgt cacaatcaag gttaccatta taatttatct ctccattttg ggccctctac 480
ttctgtacat ggtatatctt actctgggtg agcccatact gaagaggcgc ctctttggac 540
atgcacagtt gatacagagt gatgatgata ttggggatca ccagcctttt gcaaatgcac 600
acgatgtgct agcccgtctc cgcagtcgag ccaacgtgct gaacaaggta gaatatgcac 660
agcagcgctg gaagcttcaa gtccaagagc agcgaaagtc tgtctttgac cggcatgttg 720
tcctcagcta attgggaatt gaattcaagg tgactagaaa gaaacaggca gacaactgga 780
aagaactgac tgggttttgc tgggtttcat ttaataacct tgttgatttc accaaactgtt 840
gctggaagat tcaaaactgg aagcaaaaac ttgcttgatt tttttttctt gttaacgtaa 900
taataagagc atttttaaaa gcacacagct caaagtcagc caataagtct tttcctattt 960
gtgactttta ctaataaaaa taaatctgcc tgtaaattat cttgaagtc tttacctgga 1020
acaagcactc tctttttcac cacatagttt taacttgact ttcaagataa ttttcagggt 1080
ttttgtgtt gttgtttttt gttgtttgt tttgttggga gaggggagg atgcctggga 1140
agtgttaac aacttttttc aagtcacttt actaaacaaa cttttgtaaa tagaccttac 1200
cttctatttt cgaatttcat ttatattttg cagtgtagcc agcctcatca aagagctgac 1260
ttactcattt gacttttgca ctgactgtgt tatctgggta tctgtctgtg ctgcaactca 1320
tggtaaacgg gatctaaaaat gcctgggtggc ttttcacaaa aagcagattt tcttcagtga 1380
ctgtgatgtc tgatgcaatg catcctagaa caaactggcc atttgctagt ttactctaaa 1440
gactaaacat agtcttggtg tgtgtggtct tactcatctt ctagtacctt taaggacaaa 1500
tcctaaggac ttggacactt gcaataaaga aattttattt taaaccaag cctccctgga 1560
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&lt;210&gt; 143

&lt;211&gt; 1722

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;223&gt; Incyte Clone No: 1297384

&lt;400&gt; 143

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&lt;210&gt; 144

&lt;211&gt; 1741

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;223&gt; Incyte Clone No: 1299627

&lt;400&gt; 144

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tgtggcaaa  attgcaaato  ttactgctgt  gatggaacca  cgccctactg  ttgctcctac  180
tacgcttata  ttgggaatat  cctctcgggc  actgcaattg  cgggcattgt  ttttggaaata  240
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a 1741

<210> 145  
<211> 997  
<212> DNA  
<213> Homo sapiens

<220>  
<221>  
<222> 973  
<223> a o r g o r c o r t, unknown, or other

<220>  
<221> misc\_feature  
<223> Incyte Clone No: 1306026

<400> 145  
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tgctacggac gacgcctatg aagcccttag tccttctagt tgcgcttttg ctatggcctt 180  
cgtctgtgcc ggcttatccg agcataactg tgacacctga tgaagagcaa aacttgaatc 240  
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agaaaaaatc taactctcca aaacatgttt attctatagc atcaaaggga tcaaaattta 360  
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gtgaagaaac tacaactttc cctacaggag gcttcacacc ggaaatagga aagaaaaaac 480  
acacggaaag taccocattc tggctgatca aaccaaacia tgtttccatt gttttgcatg 540  
cagaggaaac ttatattgaa aatgaagagc cagagccaga gccggagcca gctgcaaaac 600  
aaactgaggg accaagaatg ttgccagttg ttactgaatc atctacaagt ccatatgtta 660  
cccatataca gtccactgtc accactttag ataagagcac tggcattgag atctctacag 720  
aatcagaaga tgttcctcag ctctcaggtg aaactgcgat agaaaaaccc gagagttgga 780  
agcaccagag agtgggatat gatgcatttg aaaaaattt agtattaatc acaatgcaca 840  
ggcacttcta gtgacacagc acccagctat agagagatat gaagggttac gagctcgaa 900  
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cgagcggaag ctnaattggt aagcgggggt gccatga 997

<210> 146  
<211> 981  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc\_feature  
<223> Incyte Clone No: 1316219

<400> 146  
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tcaagtaatt ccttgtctgg aattttctgt tgatctcatg ggtactaaga aacgaaatat 120  
tctgttcaat ttcattttta aagaatatcg ataacttgat gacccagaaa ggagttggcc 180  
ttaccactgc cttacgtgtt ctctgtaatg tgcagtcacc accactcct gttgaaggte 240  
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acacgtttat tcgagttctg caaaaattga acagtattct gactcagcct tggaggtccc 360

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caggtcgttt ggatagtgat gaacagaaaa ttcagaatga tatcattgat attttactga 600
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aaaattttta ataaattttt g 981
```

&lt;210&gt; 147

&lt;211&gt; 526

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;223&gt; Incyte Clone No: 1329031

&lt;400&gt; 147

```
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aggccaaaaga ggccccagcc gacaagtgat cggccacaag cttactctac ctctctctaa 420
gtttagaagc gctcatctgg cttttcgctt gcttctgcag caactcccac gactgttgta 480
caagctcagg aggcgaataa atgttccaac ctggtaaaaa aaaaaa 526
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&lt;210&gt; 148

&lt;211&gt; 2090

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;223&gt; Incyte Clone No: 1483050

&lt;400&gt; 148

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cattagtgat gaggcagatg aaaagactta taatgatgca ctttttcgat acaatggcac 360
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cattctccat ctctctgcag gtctgtgtac actgggctca gtaagttgtt atgttgctgg 720
aattgaacta ctccaccaga aactagagct cctgacaat gtatccgggt aatttgatg 780
```

```
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&lt;210&gt; 149

&lt;211&gt; 2403

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;223&gt; Incyte Clone No: 1514160

&lt;400&gt; 149

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2403

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<210> 150
<211> 431
<212> DNA
<213> Homo sapiens
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```
<220>
<221> misc_feature
<223> Incyte Clone No: 1603403
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ctgtgtcctt cttggcccgg gcttttgggc cggggatgca ggaggcaggc cccgacctg 360
tctttcagca gggccccacc ctctgagtg gcaataaata aaattcggta tgcgtgaattc 420
aaaaaaaaa a
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431

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<210> 151
<211> 2109
<212> DNA
<213> Homo sapiens
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<220>
<221> misc_feature
<223> Incyte Clone No: 1652303
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ccgtgcaggt tcacagcctg atttgtggcc aggcaggaca aattcctgag gcacaacttg 180
gcttcagttc agatttcaag ctgtgttggt gttgggacca gcagaaggca aacgtccagc 240
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gtcataggag gtcgttcagc ttccccaaag tcagaggtga tttgatttgg ggaagactga 360
atattcacac ctaagtcgtg agcatatcct gaggtttact tccttatggc tggccctcca 420
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agttctctct ctcatacaca cacacacct tgctccagaa tcaccagaca cctccatggc 480
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2109

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&lt;210&gt; 152

&lt;211&gt; 1114

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;223&gt; Incyte Clone No: 1693358

&lt;400&gt; 152

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```

```
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<211> 2192
<212> DNA
<213> Homo sapiens
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<220>
<221> misc_feature
<223> Incyte Clone No: 1707711
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gataccctca ccttggggta atggtcctaa cccagaccca ggggtctggaa gcttaatgtt 300
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<210> 154
<211> 913
<212> DNA
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<213> Homo sapiens

<220>

<221> misc\_feature

<223> Incyte Clone No: 1738735

<400> 154

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cccatgcccc gggacttccct ccacctcac caggacattc ttcccatctc ttgtctcctg 180
tgtgcaagtc cctttctcct ggattccatg tcttgaatgt ttcttaattt acttccctcat 240
tttggcagag gatgtcctcc agttgttttc tgggaatgct aatatgcaag tgaaccagtg 300
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acgcacaag aatggccata aaagatatga gcaaccccag ctttcacagac agtcactttt 480
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tggttttatt gacttgaaat aacaaagccc gcaagcaaca actgatcacc cgcgggatgc 780
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<210> 155

<211> 480

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<223> Incyte Clone No: 1749147

<400> 155

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cacagtctcc agaagatcag ctcaattgct gtgcaggtta aaactacaga accacatccc 360
aaaggtacct ggttaagaatg ttgaaagat cttccatttc taggaacccc agtccctgctt 420
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<210> 156

<211> 545

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<223> Incyte Clone No: 1817722

<400> 156

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attgtcatga cacagagtgt ttgtctactt tgggaacagt ttgaagatat cagtcatcat 360  
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gcattgtcat taggctgttg actctatcag atcatcacag tggagagaag tacactcaa 480  
agggagtctt acatcacatt tgccaaagta tgggttttgg aagaaaaagg tttattctga 540  
ttate 545

&lt;210&gt; 157

&lt;211&gt; 1746

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;223&gt; Incyte Clone No: 1831290

&lt;400&gt; 157

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&lt;210&gt; 158

&lt;211&gt; 2011

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens



&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;223&gt; Incyte Clone No: 1831477

&lt;400&gt; 158

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&lt;210&gt; 159

&lt;211&gt; 480

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt;

&lt;222&gt; 440

&lt;223&gt; a or g or c or t, unknown, or other

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;223&gt; Incyte Clone No: 1841607

&lt;400&gt; 159

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```

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<211> 542
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<223> Incyte Clone No: 1852391
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cttttgttta gatttaaatg tctttttatg tcaccagttg ctttgctttt taaattattt 480
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542
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<211> 1066
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<223> Incyte Clone No: 1854555
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ggcaactgtc tcggagtcgg tgcgggcgtg ttcattcttag ccctgctctg ggtggcagtg 180
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<213> Homo sapiens

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<213> Homo sapiens

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<213> Homo sapiens

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aaa 1923
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&lt;211&gt; 518

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;223&gt; Incyte Clone No: 1877885

&lt;400&gt; 166

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&lt;210&gt; 167

&lt;211&gt; 1631

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;223&gt; Incyte Clone No: 1989269

&lt;400&gt; 167

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&lt;210&gt; 168

&lt;211&gt; 1548

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;223&gt; Incyte Clone No: 1890243

&lt;400&gt; 168

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<213> Homo sapiens

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<213> Homo sapiens

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<223> Incyte Clone No: 1909441

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<220>  
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<210> 172  
<211> 1613



<212> DNA  
<213> Homo sapiens

<220>  
<221> misc\_feature  
<223> Incyte Clone No: 1932647

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cctcgttaac tccctccgcg tttggggccc acagcccccga gcagaccag gatccttgag 420  
gtgcccagtc tcttctgcta tgggaaggctg tctggaggggg acaacagaag agatctgccc 480  
caaggggacc acacactggt atgatggcct cctcaggctc aggggaggag gcattcttctc 540  
caatctgaga gtccagggat gcatgccccga gccagggtgc aacctgctca atgggacaca 600  
ggaaattggg cccgtgggta tgactgagaa ctgcaatagg aaagatttct tgacctgtca 660  
tcgggggacc accattatga cacacggaaa cttggctcaa gaaccactg attggaccac 720  
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<210> 173  
<211> 1622  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc\_feature  
<223> Incyte Clone No: 2124245

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gcgctaccgc cctccgctg gctgacgacg ggcgcgcccg agccgcgccc cctgtccgga 180  
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aaacagcagg ttgttcttaa cataacctat gagagtggac aggtgtatgt aaatgactta 300  
cctgtaaaata gtgggtgaac ccgaataagc tctcagactt tgatagttaa gaatgaaaat 360  
cttgaaaatt tggaggaaaa agaataattt ggaattgtca gtgtaaggat ttagttcat 420  
gagtggccta tgacatctgg tccagtttg caactaattg tcattcaaga agaggtagta 480  
gagattgatg gaaaacaagt tcagcaaaag gatgtcactg aaattgatat ttaggttaag 540  
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tctattttctc gagacagtga cttttttattt acccttccta acctctccaa aaaagaaagt 660  
gttagttcac tgcaaacccac tagccagtat cttatcagga atgtggaaac cactgtagat 720  
gaagatgttt tacctggcaa gttacctgaa actcctctca gagcagagcc gccatcttca 780  
tataaggtaa tgtgtcagtg gatggaaaag tttagaaaag atctgtgtag gttctggagc 840  
aacgttttcc cagtattctt tcagtttttg aacatcatgg tgggtggaat tacaggagca 900  
gctgtggtaa taacctatctt aaaggtgttt ttcccagttt ctgaatacaa aggaattctt 960  
cagttggata aagtggacgt catacctgtg acagctatca acttatatcc agatgggtcca 1020  
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gagagactct gtttcaaaaa aaaaaaagt gaccttattc tctaaaaggg ctggctatc 1560  
atatgatgaa ttgttaagga aaacttaaa tggacaagaa caggatgtga agagaggtga 1620  
tg 1622

&lt;210&gt; 174

&lt;211&gt; 1320

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;223&gt; Incyte Clone No: 2132626

&lt;400&gt; 174

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&lt;210&gt; 175

&lt;211&gt; 778

&lt;212&gt; DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<223> Incyte Clone No: 2280639

<400> 175

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cagcgagggt atggctggac cggcggagga ggccggagcc cattgtcccc agagcctgtg 180
gcctctgcct ccgcagggtg caccaagagt gacctacaca cgagttagcc cagggcaggc 240
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cggcccccct gcacagaggt gacatctcaa gggcccaggc agccctcttc tagtgggtgc 660
aagacgcgga tgcctcgggc tgcaacttgg tcccagccca ctgctcagc cctgagggtt 720
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<210> 176

<211> 1477

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<223> Incyte Clone No: 2292356

<400> 176

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gttgacaaac cctggtcatt gtgtgatggg gggaggcctg ggcctggccc gccctctgc 180
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gaaaagccc gctggacgag gtcatggctg ccgctgcct tacaagcctg tccaccagcc 540
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<210> 177  
<211> 682  
<212> DNA  
<213> Homo sapiens

<220>  
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<223> Incyte Clone No: 2349310

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acctgacctg acagggagga ggctgagaac tcagttttgt gaccatgaca gtaatgaaac 600  
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cttgggtaat aaagacaaac tt 682

<210> 178  
<211> 1508  
<212> DNA  
<213> Homo sapiens

<220>  
<221>  
<222> 11, 139  
<223> a or g or c or t, unknown, or other

<220>  
<221> misc\_feature  
<223> Incyte Clone No: 2373227

<400> 178  
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ttcccgactg gaaagcgggc agtgagcgca acgcaattaa tgtgagttag ctactcccc 240  
accccccttc ccgcgggctt cgggttcaaac gaccgggtgg gtctacagcg gaaggggagg 300  
agcgaaggta ggaggcaggg ctgacctcac tggccacctt cccaacccca agagcccgag 360  
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aaaaaaaa 1508

<210> 179  
<211> 558  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc\_feature  
<223> Incyte Clone No: 2457682

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<210> 180  
<211> 502  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc\_feature  
<223> Incyte Clone No: 2480426

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ggctccggagt agcgagcgcc ccgaaggagg ccactcggga gccgggaggg gggactgcga 180  
gaggaccgcc gcgtccgggc tcccggtgcc agcgtatga ggccactcct cgtcctgctg 240  
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ccgggactgc cgggacctcg aggggacccc gggccgcgag gagaggcggg acccgcgggg 360  
cccaccgggc tagccgggga gtgtcgggtg cctccgcgat ccgcttcag cgccaagcgc 420  
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<210> 181  
<211> 1659  
<212> DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;223&gt; Incyte Clone No: 2503743

&lt;400&gt; 181

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ccctcacagt gccccctgga aaccacttg gctgcatac cgctccctg tcgtcttgcc 240
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&lt;210&gt; 182

&lt;211&gt; 2015

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;223&gt; Incyte Clone No: 2537684

&lt;400&gt; 182

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&lt;210&gt; 183

&lt;211&gt; 740

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;223&gt; Incyte Clone No: 2593853

&lt;400&gt; 183

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cggaaaaaac attgcaaaaca tgtgtcgtgg gattccaaca tacatggctg aggagatgca 480
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atttagtcat ctgaatatgc tgtgcagaaa aaatatgggc tccagtgggt tttaccatgt 660
cattctgaaa tttttctcta ctagttatgt ttgatttctt taagtttcaa taaaatcatt 720
tagcattgaa aaaaaaaaaa 740
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&lt;210&gt; 184

&lt;211&gt; 748

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;223&gt; Incyte Clone No: 2622354

&lt;400&gt; 184

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gggaaccttc caccctctg tgagattttc catcatctca agttctcttc tatccaggag 720
caaagcacag gatcataata aatttatg 748
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&lt;210&gt; 185

&lt;211&gt; 648

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;223&gt; Incyte Clone No: 2641377

&lt;400&gt; 185

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ccacttctgg tgtagggtaa acacctgcgc attcatgtcc tagtgttg 648
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&lt;210&gt; 186

&lt;211&gt; 2110

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt;

&lt;222&gt; 1932

&lt;223&gt; a or g or c or t, unknown, or other

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;223&gt; Incyte Clone No: 2674857

&lt;400&gt; 186



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2110

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&lt;210&gt; 187

&lt;211&gt; 773

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;223&gt; Incyte Clone No: 2758485

&lt;400&gt; 187

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cctctgcctg gcccggtctc tgggaagtgc gcagtccggg togtgtaggg ataaaaagaa 180
ctgtaagggt gtcttttccc agcaggaact gaggaagcgg staaaccccc tgcagtacca 240
tgtactcag gagaaaggga ccgaaagtgc ctttgaagg gaatacacac atcacaaga 300
tcttggaata tataaatgtg ttgtttgtgg aactccattg ttttaagtcag aaaccaaatt 360
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cacagatgac ttttctatg ggatgcacag ggtggaaaca agctgctctc agtgtgtgc 480
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acaaagtgtta cttaatgcac agcttattaa aaagatcaaa attgttatcc taatagatat 720
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<210> 188
<211> 714
<212> DNA
<213> Homo sapiens

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<220>
<221> misc_feature
<223> Incyte Clone No: 2763296

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<400> 188
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attggcttag gggctactcg gctctcactc agctccacag ggactcaaga atgcggcgcc 660
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<210> 189
<211> 609
<212> DNA
<213> Homo sapiens

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<220>
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<223> Incyte Clone No: 2779436

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aaaaaaaaac
609

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<210> 190
<211> 1088
<212> DNA
<213> Homo sapiens

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<220>  
<221> misc\_feature  
<223> Incyte Clone No: 2808528

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gcgggttcat gagcgcacct gggcccagca gttgctacag gagatgaaga ccctcttctt 180  
gaatactgag tacctgatgc ccttttctcc caaccagtgt ggatcccttc tctattacct 240  
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aacaagagtg aaagagtttt gtaaccttca agtgcgtgtc agctgcgggg atttagcaca 660  
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<210> 191  
<211> 1377  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc\_feature  
<223> Incyte Clone No: 2809230

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acagttacgc tctccgcgg cactcccgcg aggaactgaa gtcttgagcg ctcaagtttg 180  
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tttttctttt ctttttaact aagaatgggg ctgttgtagt ctcactttac ttatccttaa 1260

atttaaatac atacttatgt ttgtattaat ctatcaatat atgcatacat gaatatatcc 1320  
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<210> 192  
<211> 985  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc\_feature  
<223> Incyte Clone No: 2816821

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cgctggccct gggctcagcc gcaactggcg ccgccttcgc cactggccctc ttctggggga 180  
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gcgaggtgga cgcgcagccc ccggagctgg gacggccctt gtggaggcag gccgagggcg 540  
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cgggcgaggg cggcaccttc gacgtggccg tgggtggatgc ggacaaggag aactgctccg 660  
cctactacga gcgctgcctg cagctgctgc gaccggagg catcctcgcc gtccctcagag 720  
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<212> DNA  
<213> Homo sapiens

<220>  
<221> misc\_feature  
<223> Incyte Clone No: 2817268

<400> 193  
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 <213> Homo sapiens

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<212> DNA  
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<220>  
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<213> Homo sapiens

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&lt;211&gt; 2029

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;223&gt; Incyte Clone No: 3044710

&lt;400&gt; 198

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<213> Homo sapiens

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<213> Homo sapiens

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<211> 491  
<212> DNA  
<213> Homo sapiens

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<221> misc\_feature  
<223> Incyte Clone No: 674760

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<220>  
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<220>  
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&lt;210&gt; 206

&lt;211&gt; 1832

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;223&gt; Incyte Clone No: 1910668

&lt;400&gt; 206

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&lt;210&gt; 207

&lt;211&gt; 567

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;223&gt; Incyte Clone No: 1955143

&lt;400&gt; 207

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&lt;210&gt; 208

&lt;211&gt; 1303

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;223&gt; Incyte Clone No: 1961637

&lt;400&gt; 208

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&lt;210&gt; 209

&lt;211&gt; 1355

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;223&gt; Incyte Clone No: 1990762

&lt;400&gt; 209

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&lt;210&gt; 210

&lt;211&gt; 776

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;223&gt; Incyte Clone No: 1994131

&lt;400&gt; 210

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atggagtcct cctgattttg tgtgtgtgtg totgtgttta agcacgcgtt cggttggtat 720
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&lt;210&gt; 211

&lt;211&gt; 817

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<223> Incyte Clone No: 1997745

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<210> 212  
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<212> DNA  
<213> Homo sapiens

<220>  
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<223> Incyte Clone No: 2009035

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ttaatgatat gatgttgagc ccagtggtat tattacagtc ttacttatta ttgtcttact 180  
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ataaactatt ttccatata tggatgtata atttaacaca ttctaaacat taatgtttaa 300  
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acagtggctc ataccctgta tcccagcact ttggggaggcc aaggtggggg tagactgggt 420  
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aaaa 484

<210> 213  
<211> 509  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc\_feature  
<223> Incyte Clone No: 2009152

<400> 213  
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tatataaaaa gttttaataa atacctaata tattatttaa tatgataaaa ottatatataa 180
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<210> 214
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<220>
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<223> Incyte Clone No: 2061752

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<210> 215
<211> 1273
<212> DNA
<213> Homo sapiens

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<220>
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<223> Incyte Clone No: 2061933

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<400> 215
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g t t a g a t t a g   a g a t g c t t t   g c t g a t c g c a   g g g g t t c t t a   t t t g a a a c a   t c t a t g a t g g   480
g g g t g g g g t g   g g a g g a g a c a   g g t t g t g g t t   a t g c a g g a a a   a t c t g t c c t   a a a a t a t a t   540
g a g t t t g g g g   g t a a g g g g t g   g g a t a g c c a a   g c a a a a t c a g   t a a t t a t t t   a a a a t g a a c a   600
t a t g t a t t t t   t a t t a a c t t t   t a g t t a a a t a   c a g a t t t t a c   a a c g a g g t c a   g c a t a a g c c t   660
a a a t c t a t a t   a g a g g g c t a a   c t c a g g c a t t   g t c t t g t t t a   t t t g t a g a c t   g g a t t a a a a   720
c a a c c t g t c c   t g t t t t g t c a   g t t c c c a g c t   t c t t c g t t t a   g a a t a a a t t a   g a c c a a a a g a   780
a g a a a c g t g c   t t g t c t c t g t   a t a c c c g c a g   a a t g a a g t t a   c t g t t g t t a a   a a c t g g a t t t   840
t t t c a t t t a   c t a g g t t c c g   a a g a g t c c a g   a t g c t t g g t a   g a t g t t c a a t   a c g t g a t t t t   900
t t t t t a a a t t   g a a t g t g t t c   a t t t a a a a t c   c t c c t t a a c a   t t t c t a g a a a   g a c t t c t t t c   960
a a t a a a t a a t   g g a a t c t t a g   a g g a a a a g t g   g t t t t t t a a a   a g c t a g g g a a   c t c c t c c a c t   1020
a a a a g t a a c c   a t t g g a a a c c   t c g a a t g a g g   g c t a a a g t t t   t a a t c a t a a g   a g a a a a g g c a   1080
g c a t a a t g a a   a t g t g t a c a c   a t a c a t a g t c   a g t g g t c c a t   t t t a g g a a g c   c a g t g g c g t c   1140
t g a t a a a g a a   a c t g t t a a g a g   t a g t g a g g t t   g a g g a a g g a a   a t t g t g g g g a   t t t g a a a t a t   1200
t c t c t t t a t g   t t g t t t c t c t   t c t g a g t c a t   g g t a a a a c a a   t a a a t t a t c a   t c t c t a g g t g   1260
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<210> 216  
<211> 1279  
<212> DNA  
<213> Homo sapiens

<220>  
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<223> Incyte Clone No: 2081422

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t c a g a g c a g g   g a g g a a g g c t   g t g t t g g g g a   c t t c c a g c t t   g c t c t c c t c a   t g c a t g a a g c   120
c a c t c a t t c c   c t t t c t c t c t   c c c c a c c c c   t t c t t c c c c t   c a c t t t c t t c   c t t t c c t c a c   180
t t c t c c t t t c   c c c t c t g t g c   a g a g c t c t t g   g c a c c a g t c a   a g c t g t c c c a   c c c c t c a g g g   240
c c c t c t c a g t   g a c t g a t g c c   c a t g g c t c c c   t c c t c c t a c a   c c c a a a g a c c   c t g g c t t g c c   300
c a t g t c t c t g   a t g a g a a t t c   a a a g g g a g c t   g t g t t t a t a t   a a c g t a g a g g   g a t t t a c c t g   360
t g g c t t t t c c   t t t a c t c a c t   t c c t c a a a a c   t g t a c a t t t a   t g g c a t a g g a   t g t c a g t c c t   420
a a a a g t t t t a   t t a t c a a a a c   a g t a g g t g g c   a a g t a a t t a t   t a t c a t a a a t   c c a g c a g g t t   480
c t a g a g a a g c   c a a g t t g g a g   g a g a a a g c a g   g a t a g a g t c c   a c c a t g a c c a   t t g a t t g t t g   540
g g c a c a t t c t   t t c t a a g a a a   c a g a t t a a t t   c c a t t g t a t c   t g t t c t c t g t   t a t c c c a t a c   600
c a g c t t a t g a   t t a g a g t c t t   g a g c t c a c a a   c t t g g t c c t c   t a a g a g g t a g   t c a g t g g t c a   660
g e g e t t c a g e   t t g a c c a c a g   c g t t t g g t t c   t t t c t t t a a g   t g t t g t g t t g   t a a t g c t t g g   720
a t t a t a a a a g   c c t t a a c a c g   g c c c c a t t t g   a t c a g t t c c c   t g c c a a c t c t   t g t a t c c t c a   780
t t t c a c t a a g   c t t t g t t a c a   c t c a c t a g a c   t g t t a a c a a c   g g a g a a a a a c   c g t g g g t a c   840
t g a a t a t g c c   a t a t a c a a c t   t g c t a t t t a t   t c t g t t c c c t   g t t t a g a a g g   c c a t g g c t a c   900
c c t t a a c t a t   c t g a a c t c t c   c c t g t c c t g t   a a g a c t g a g c   t c a c t g g c a a   t a t c c t a t a g   960
g c t g c t t t c c   c t a a g c c t c c   c c a t c t t t c t   t c c t c c c t c c   t t c t a c t t c t   c t c e t a c c t c   1020
c t t t t c c c t c   t c t c c c t a c   t c a c c t g c t t   t c c t t t t g c c   c c t c c c a c a t   c c t c t t c c c c   1080
c t t c t t g t c a   t t t t t c c a t g   t c a a g a a a t t   t c c a g a t a t a   t a g g a a t a t g   a t g g a g a a t g   1140
c t g a c a g g c a   g t t c t t t t g a g   t a g t c a a a t t   a a g a t g t a a t   g g t t g a a t t g   t a t a a t g g c a   1200
a t c a c a t a a a   c t a c a t a t a t   a a a g c t t t c t a   g c t t a g t a a a   c t c t a a a t g t   g t t t t t t t a a   1260
a c t a a a g a a t   g a g g g g g g g g                                     1279
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<210> 217  
<211> 899  
<212> DNA  
<213> Homo sapiens

<220>



<221> misc\_feature  
<223> Incyte Clone No: 2101278

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cccatgagca ggaccgcctc catgattggg gagcatgcac ttgtgactgc agggtaagag 120  
tgggaagata ggtttgtgga gtggcaccga caggactgtg attgtgtgtg ggcttgcccc 180  
acatttctct ggggatgct tatgtgagag tgggcccagt gaaagagtta ccaagccacc 240  
cacaccccta acactgttct ggatgagaga tgagagcaga ccggcttctc cccatcagt 300  
cattgtgcct gttgtacacc cctggaggag cctggagacc agcccagggt ggggtacaca 360  
tctttttaa ttccatattg ttgccagctt atttctttca cttgtttact gtaatatctg 420  
gcgtgttttt atttatctaa ttttgtatto agttataacc atggtagggt tagtgaatat 480  
atgacagggt taatccctgg tgctgcagtg gaccttcttt tcttttggac aagataatac 540  
tgtgagtttc cctccttctt tccctctaat ttgttttctt tttttcccca gcctcttgca 600  
tcccttctct tcttaccctg tctacaaact atcatatgca cagtcttctc tctttgtgtg 660  
tgactgttac aaaatttcac ttttcaaaat cgaaatcagg tgtttgctca aatgagggga 720  
gatttttttt tttttttttt ttttaaatgc tgagacttca gcagagtact ttcttttgg 780  
tgggttcccc caaaaaccca tcagtctggg agagcattgg gagtggaaat catgttcct 840  
gggatgctgg tttctttgaa aattatataa aacgtatgta aaaggtcccc ccatttggg 899

<210> 218  
<211> 645  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc\_feature  
<223> Incyte Clone No: 2121353

<400> 218  
caaagtgcct ggattacagg tatgagccac cgcaccgggc ctgttctatt tttctagtta 60  
agggaaactga agctcagaga ggtgtcacca gcaggtyttc attcccatgc cagccttgcc 120  
ccccggcttt tcccaggcag gctcctgcgt gccactggc tccagcctgg tctctgtct 180  
cttggctgct tcaactctgc tctttgtccc gactctggcc ctgcttacag gggccactac 240  
ctgctgggtgc ctccataaca agcgtctggc gttgagacct ctggcatggc aggggctttg 300  
gggtctggtt tccacaaggc ttagccatgg cagaacctcg ttttatttta actctttgcc 360  
cctacaaaca aacagcagta cttgccagaa ccattcttgg gattcaggag ctggggcgac 420  
tgctttggcc tctggccgca cccaggaggg tggggttggg tctgtgtagt tgccaggccc 480  
acacctgcca gcagggggct gactggatcc atgctttact gtgtttaatg ggggtaacag 540  
gggtccttac agcctcccca gctaaacatt tggaaacaaa caccagccct tttgtagtgg 600  
atgcagaata aaattgttaa tccaatcacc tccaaaaaaa aaaaa 645

<210> 219  
<211> 703  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc\_feature  
<223> Incyte Clone No: 2241736

<400> 219  
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agattaaactt ttctctttgg agttctaaaa cattaactgg aaagattaga taatatacta 120  
aatgtatata gaagtataca gactatacaa agactgaaac aagtccttt tgcactacaa 180

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ctctataaca ttaccgcaga aattttgggt ctatgtagca tggacctcct aaggaattct 240
gtttctttta gcattgagat ccttggtgct ctttttttac ctcagaattg gtacaatcat 300
tattaaacgt taattttatt caaacctttt aattgaaaaa aggaaaggga aacttaattg 360
gggataaatt caggcatcat attattatga tagagtctcc tgagtgggtc gtctataggt 420
aatgaactca ttggtgttat ttcttggaca tcttggcctt ttaatcaaag actgtgtgct 480
gctatttgct atgagcaagg ttctcaaaa gcaaaagggt cttggacctt ttggatcacc 540
tgagttagaa tctctaggta tagggccag gtatctgcat ttccacaggt ttctttaggt 600
tgactttctg caagctaaag tatgagaacc attggcttgg atgtagtctt aaacttttag 660
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<210> 220
<211> 536
<212> DNA
<213> Homo sapiens

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<220>
<221> misc_feature
<223> Incyte Clone No: 2271935

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<400> 220
ctttcatcat aattaaagt ctgtcagggg aaatggcatg gctgagtttt gctgctgttg 60
aaatgacctt cctcctccac tctctctcgc ttctctcatt tgcataagt gtcttttctc 120
tgctgaaat caggcccttt ggtgatggaa attttagctt aaagcagagt tctaagcaga 180
atcctaacc tgcgagggtg gggagaaaat caatgttttg agctgggtgc tgtttgtagc 240
gaggtgctgg tgaggccatt ttcacacagg ggaacgggtg tggtggctac ttctgggctt 300
tagatccacg caaggtctcc taaatacaag tcaactgtcat ggtacacaa tttagcaaac 360
ttggaggctg attttccccc ttgacttagc tagggtcagg aggaagctgt ttagaagtac 420
agaggttctg catctgggag ggtaaaatcc aaacgcctct catgctcaga gggaaagcat 480
gcctgcatgt ttactatcac tgctggccta cgtgcttctg tgctgaattt agatgg 536

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<210> 221
<211> 790
<212> DNA
<213> Homo sapiens

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<220>
<221> misc_feature
<223> Incyte Clone No: 2295344

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<400> 221
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tatttacaat gttatctctt aaatctttga gtacattaca ttttctcccc tgataatctc 180
ttctaaatta ccttctctag ttggttttct tcccttctct aatgttagcc attcttcagg 240
tgaaggttaa tctcaatgt actcttcatg tttaagggga gggctctaaa ccttggtggg 300
aggacttacc aacggagttt catgcatga tgatcttatt gagcttattg gtgacctta 360
tctcagtatc tttagttttt cttgggctgg tcagattttc aagagaagac ttttcatctc 420
ctttgtggag ggaagggtcc ttttaccagc actcttcaag ctcagtaggg gaaagacttc 480
aagcactcag gaagcatgca ttcaactttt ttggaacaat acccttactt gtaactgtgc 540
ctcagggtgc atagtccaca gagacttctt ttacctgtcc agagaataaa attagtgtgc 600
tggtggggta acaaaaagtg tggagctgaa gagggtaacct ataaatgaag ttgttttctg 660
gccgggcgca gtggctcacg cctgtaatcc cagcaacttc ggaggccaag gtggagggat 720
cacttgagtc caggagtgtt agaccagcct gggcaacata ctgagactcc gtctctccaa 780
aaaaaaaaa 790

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<210> 222  
<211> 1045  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc\_feature  
<223> Incyte Clone No: 2303994

<400> 222  
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atgagaccct gtctcaaaaa aaaaaaaaaag tttctctagaa taagcaggat gattgtttta 120  
tttgaagatg gaacaggaaa ctagagtga tttaaaatac tctgtcttca ttttaacatg 180  
ttgaatggaa taactgcata tcaccatgag tttgttttgc ttttcataca gacctgtatg 240  
tgtcatttga gtggtttcca gattggagcg aggttattct gatctaaatg aacagcattt 300  
ttttccttag cctctgtttg ccactctggg tatctctcct atggggcaag ccattagaaa 360  
tgcatataaac ctgcagacat ggttttttggc aaaaactcca tgacttttaa ctagtctttt 420  
tactactgac ctttcacaga gaaaaaatat ttcccttgaa aaaaactggg cttgtcattt 480  
tttcccttgt agctttaagc agagacataa gtgccttgca ttacacatag taaactttct 540  
ttaaaaaaaa aaaaaaagat tttggagact accagggtta gattccaact tgtccaaaag 600  
ctttctggcc ttacatatat tattataaaa attctcaagt ctggtaatct tctatgtcag 660  
agctagtgat ttcaaaaggt ttcacaattc ccaagacaa aagtgtttt cgttcattat 720  
aataaggtta agtgatatgt gattcataac aattttgatg tgaagaaggg aaggacatca 780  
ttgacttaat aatagtatca gtcggtgcaa cagttaggcaa catgtgcctt cacactttac 840  
cataaagaga cgggtttgag ggtttgcctt ctaaagtctg caacttcaag aaaaaaatc 900  
gacaccgtgg attgaccttc ccgggtccac taatataaag ccaataaagc ttaaaaacac 960  
ctttggtaac ccatgtaatt caactccggt ccagtggccc tataattcca attaaaaatg 1020  
gttcaatctc ttggaaaaaa aaaaa 1045

<210> 223  
<211> 553  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc\_feature  
<223> Incyte Clone No: 2497805

<400> 223  
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ttcctgtgga ctttgtccca caccacctgc ctgggttccct tcccttagtc acttccagct 120  
ccaggcacag cagttagtga ctccctgggt ggagccgtgt cccaccgggt cctgatactg 180  
ccgtctcttc tttcacagtc ctccaggctt gggccagcct tgggggcagc agagcttctg 240  
gggtgagtgat cgagatcctg tgctctgaga gcggtagtca gggagagggc tggtcggggc 300  
agggctgccc gggcaggaca caggatgcgg ccggccaggc tggggccaag gtgttcagac 360  
ctggactttg ggctcgtgct ttcttcattg ttgctccttg ctgccttg ctcgctgtcc dttgagctct 420  
tcattttggt ttgctttttt tgtttgtttg ttttcaccta atttttgcca gacttaagct 480  
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gcttttgaat cca 553

<210> 224  
<211> 706  
<212> DNA  
<213> Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;223&gt; Incyte Clone No: 2646362

&lt;400&gt; 224

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gtgggctctg tgcagcatgt tgcctctgct tggctgtgcc tgcagctcag ggtgctgggg 240
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caacccctc tcctttctt cagttctccc atgcagccga ggcccgggcc cctcaggact 360
ccaaggagac ggtgcagggc tgcctgcccc tctaggtccc ctctcctgca tctgtctccc 420
ttcattgctg tgtgacctg gggaaaaggca gtgccctctc tgggcagtca gatccacca 480
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ggggctattc acttttatat atttatataa aattagttagt gagatgtaac aaaagcttta 600
ttggtgtggt tgagctgggt ggtgccacat atttggggat ttgaagaagg aggtgagatg 660
tctggatggg gacgggatg ggtagaggat tcagtatac tccgag 706
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&lt;210&gt; 225

&lt;211&gt; 509

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt;

&lt;222&gt; 492

&lt;223&gt; a or g or c or t, unknown, or other

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;223&gt; Incyte Clone No: 2657146

&lt;400&gt; 225

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aaattttagt gtattacatt tgcctttact gtttatgtgc agcataaagt tgcttttgtt 60
acaattcatg ttgttttgta atggttgatc aaagcaaaga aagacatgtg ttactacgca 120
tgatctgtca atgtttaagg ctggtgttgg ttctgtgac ttgtetaata tgtttttctc 180
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gtaagtcaca aaggagcat ttcacggatg gacagggtgt tctgatcagt gtgtggagaa 300
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tatctctggc tgtccagata tgtgtttcta ctgagactgg cactctcctg tagcatgggg 420
atgttagatt aaggaagggt gttaaagggg aaagaatgaa tgaactgtgg tgtgaaattt 480
cttccaagga gnccatccga cagcagaca 509
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&lt;210&gt; 226

&lt;211&gt; 2153

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;223&gt; Incyte Clone No: 2755786

&lt;400&gt; 226

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gaaggcgggt gctgaggcgg ttccggaggt tctagtgtcg gaggctgggt caggcagggt 60
ccatggggccc gcttgaggca cactgagggg acgcggggct gggccatggc cggcgtctcg 120
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gagctggggc ttggggagct gctggaggag ttctcccgga ctcagtaccg ggccaaggat 240
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ctcagaactg tgtgggggtt ccttggggcc ttgtggaagc catgacttca caaagacctt 2040
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<210> 227

<211> 791

<212> DNA

<213> Homo sapiens

<220>

<221> misc\_feature

<223> Incyte Clone No: 2831245

<400> 227

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gagaatggta tggagatgaa aggttctcgt gtatggcttt tgcctcatt tatgtggaaa 180
gcacgccta cattctttca aagctgtgtt gtcccttcta ttctcagtc ccagaattgt 240
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gggaaga aac aaatttctgc tgtgttctca atctccagac ggtccatgaa aatttaagt 480
ataagaacaa agaggctggg cgcagtggt aacgcctgta atacctgac ttggggaggc 540
tgaggtgggt ggatcacctg aggtcagaag ttcgagaaca gcctagccaa catggcgaaa 600
ccctgtctct actaaaaata ccaaatctgc tgaacgtgat ggtgggggct gttacccca 660
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gtactctggga ggctgaggca ggaaatcgct gaactcggga agcaaagggt gcattaaggg 720  
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caattccac a 791

<210> 228  
<211> 870  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc\_feature  
<223> Incyte Clone No: 3116250

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tcgccagagg ccacaggga cagggccagg cttctaggag atggctccag gaaggcgccc 300  
aagaatgtga gtgcaaatg tgggttcctga gagccccgag aagaaaattc atgacagtgt 360  
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gacaccaaag gcaccacaga aagccaaaca agcattccag agcctgccag caatttctca 480  
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tttcaagatc attttgtttg ttgctctctc tagtgtcttc ttctctcgtc agtcttagcc 720  
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<210> 229  
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<212> DNA  
<213> Homo sapiens

<220>  
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<223> Incyte Clone No: 3129630

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gtacattcta ttttaaggtaa gtagaatcat cctaatacata ttacatcaat gaaaaatctaa 420  
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acaaggcaga actaggggac ttgaccttgg gacctttttg ggtcctaaac tccaggtaag 660  
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<211> 540  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc\_feature  
<223> Incyte Clone No: 007632

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ctgattgctt ctggaaatac tgtgtctgaa gtgaaataag catctgttag tcagctcaga 420  
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<211> 857  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc\_feature  
<223> Incyte Clone No: 1236968

<400> 231  
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<210> 232  
<211> 1010  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc\_feature  
<223> Incyte Clone No: 1334153

<400> 232  
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actgcagtg c ttgctgcagc tgtagaatct ctgagctgag tgccgtgtaa ttcatgggaa 180  
aaatcctgtg tcaacagcat tgcctctgaa tgcctccac atgccaacac cagctgtatc 240  
agctcctcag ccagctcctc tctagagaca ccagtcagat tataccagaa tatgttctgc 300  
tcagcggaga actgcagtga ggagacacac attacagcct tcaactgtcca cgtgtctgct 360  
gaagaacact ttcattttgt aagccagtg tgccaaggaa aggaatgcag caacaccagc 420  
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<210> 233  
<211> 1981  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc\_feature  
<223> Incyte Clone No: 1396975

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catacaccce agaagacttc ccaaatgagg ccagactcag ggtcacgggg aatgtgcttc 480  
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1981

<210> 234  
<211> 744  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc\_feature  
<223> Incyte Clone No: 1501749

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ctcatgtctc tgtgctgggg ccaggtgggc ataagtggaa ataaactcaa gctgatgctt 180  
caaaaacgag aagcacctgt tccaactaag actaaagtgg ccgttgatga gaataaagcc 240  
aaagaattcc ttggcagcct gaagcgccag aagcggcagc tgtgggaccg gactcggccc 300  
gaggtgcagc agtggtaacca gcagtttctc tacatgggct ttgacgaagc gaaatttgaa 360  
gatgacatca cctattggct taacagagat cgaatggac atgaatacta tggcgattac 420  
taccaacgtc actatgatga agactctgca attggtcccc ggagccccta cggctttagg 480  
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aagcattttg ttaaaaaaaa aaaa  
744

<210> 235  
<211> 979  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc\_feature  
<223> Incyte Clone No: 1575240

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acagcatgac acccaaaaaa agggagcctc cagctgcacc cctgctgctg cgagtacttc 180  
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caccaccato ttcccatgag cgcacotcag aaatcaggct cccacctgac ataacacaac 480  
catgcctcac aaaaagacag tggtttatcc cttccctagg agaaaagaga ggcaatgcca 540  
agctgcttca tcaactgtta ataactcttc cagcccgcaa ccaggatat ctgcaggtgt 600  
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gccacaccat gccctcgga gtgtgggtcca aggacccctg aggtgcctca aggtccttc 720  
tttcccaacc ccacgtggtt ttcttcagtc aggataccat actgcaacag accgaaggcg 780

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gaagcagcta tgaggatgca gcagccttct gttaagccag gctttaagga tctgcaaaaa 840
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atTTTTTTTaa ggtaacatgt aatggatgta tagtcttcaa atggatgaat aaatgttttt 960
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979

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<210> 236
<211> 760
<212> DNA
<213> Homo sapiens

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<220>
<221> misc_feature
<223> Incyte Clone No: 1647884

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tgatttttca ttgattcagc aaatatttat ggggcaccta ttctgtgccg ggccctgttc 540
tctgtactgg gaataccgca gtgaataaga taaactccgt gtccttgtag agccttcatt 600
ttagttgggg aagacaaaaa attgagaata agtaggccag gcgcgggtggc tcaacttctgt 660
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760

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<210> 237
<211> 1080
<212> DNA
<213> Homo sapiens

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<220>
<221> misc_feature
<223> Incyte Clone No: 1661144

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<210> 238  
<211> 1129  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc\_feature  
<223> Incyte Clone No: 1685409

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<210> 239  
<211> 2370  
<212> DNA  
<213> Homo sapiens  
  
<220>  
<221>  
<222> 122, 124  
<223> a or g or c or t, unknown, or other

<220>  
<221> misc\_feature  
<223> Incyte Clone No: 1731419

<400> 239  
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&lt;210&gt; 240

&lt;211&gt; 981

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;223&gt; Incyte Clone No: 2650265

&lt;400&gt; 240

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cctggtctct gttcccttcc gtactcaaag ctctgtcatc caggaggggg aaaccggaga 180
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tgtcaggtcc tccccagac acctgcggac cctccctctc ctggcttccc gtctggtcat 300
ggcgagatcc tgggtctcgc tagccggtgc tggcttcttt ct-gcattttt tggttttgca 360
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ttatacagtt gacacacctc atggctatatt tgcagccagt actctatatg aacaatccgt 660
ctggatcacg gatgtaggaa gtggcatgta tagtaatata tattaaatta tcttactgga 720

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aatcacatct ttgcacatgt ccttgttctgt attgttttaa atcagagttg ctgaatctaa 780  
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acggtgaaac ccccgctctcc a 981

<210> 241  
<211> 1204  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc\_feature  
<223> Incyte Clone No: 2677129

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tgccctactg ctattaatta attttttttt ggtctcttct ttccttgctt accctttgtt 180  
taacaaccaa atcaactcta gatcaatgaa tgaataaaaa aatctccagt acctacctcg 240  
gaccagtga ccccgcgaaag ttctctttga agataggact agagctcatg ctgatcatgt 300  
cggtcagggg ttgactggc agagtacggc tgctgttggg gttttgaaag ctgtacaatt 360  
tggtgaatgg agtgaccaac ctgcataaac caaagatgtg atttgttttc atgctgagga 420  
tttactgat gttgtacaaa gaottcagtt agatcttcat gaacctccag tttcccggtg 480  
cgtacagtgg gtagatgaag ctaaaactaaa ccaaatgagg cgggaaggca ttcgttatgc 540  
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caaaacagtt tggcggtgt gcagcttagc ctggcatata aggcctaaac agtaccaccc 660  
tgttgtggaa gccactcaaa acacagaaaag caattctaac atggactgtg gtttaactgg 720  
aaagcgagaa ttagaagttg actcccaatg tgtgaggata aaaactgaat ctgaagaagc 780  
atgcacagag attcagctgt taacaactgc ttcacatctt tccccacctg catcagaact 840  
taactctacg caagatcaga agactcagcc tattccagtt ttaaaagtgg aaagtagact 900  
ggactctgac cagcaacaca atctgcaaga acattcaacc acttctgtgt gatatgtaca 960  
tattcaaaac catttttttaa ctttttttaa ttttgatgtg aagttatagt ttataactg 1020  
gcttaagtta agttttattg gagaaatctt gcctataatt ctataaagag aaatgacatt 1080  
cacaaatgtc agcatatctt ttacacaga tatgcaagtt agagtgtatc tatccggtag 1140  
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cgag 1204

<210> 242  
<211> 784  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc\_feature  
<223> Incyte Clone No: 3151073

<400> 242  
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cccatctctg agccctcag ctttataggg atgtcagctt ggccccaatg tagtccattt 180  
tacagccaga ctccctggact tgccctatgag ccatcttcat ttccaaaaag gcgatattgg 240  
gtatgtacat tgcattgaaat aaagtgggaa tgcctccagaa gcagaaggac atctgatgca 300  
gtccacgcca ataaattggg cttaccttta aaaatcatct gaatatgcag gtcttagggc 360  
agagaatata gacagcttaa gatcttctaa actacaagtc ccacccaaaa tacggatttt 420

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tcattgatttc ccaaagggttg accatcagca agactggata tttttcagac ttaagatgac 480
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gcagttactg gatgttgaat ttgaaacctt ttcattttct tttttaaaac aagcttggtc 600
atttctgtgc aatgctataa ttcggaacga aacaaagcac aatgttaata aggtagacac 660
taattcattc ctctgaagag agatctcttc cagacatttt aagccagggc aagaaatgtt 720
taaagatgtt ttctgcagtt gccgtagaaa cactccttag cagtcattct ggctgttggg 780
aaaa
784

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<210> 243
<211> 426
<212> DNA
<213> Homo sapiens

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<220>
<221> misc_feature
<223> Incyte Clone No: 3170095

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<400> 243
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atgtgtgagt aacaccccag gatactgcag gacatgttgc cactgggggg agacagcatt 180
gttcattgtc aacgcttcca gaaaatgctg catcagctac tcttctctgc cgaagcctga 240
cctaccacag ctcatcggtt accactggca atcaaggaga agaaacacac aaaggaaaga 300
caagaagcaa caaacgaccg taacatcata ataaccactg ctatcgcttc caccactca 360
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ctcttt
426

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<210> 244
<211> 1732
<212> DNA
<213> Homo sapiens

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<220>
<221>
<222> 1651, 1655
<223> a or g or c or t, unknown, or other

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<220>
<221> misc_feature
<223> Incyte Clone No: 3475168

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<400> 244
cgggaccaga gcacgttctt ggctgcagag gccacaagtc acgctgtctc tgagagtggg 60
atgtcaccat cgcccagggt gggatttttg tgtgttttgt tcactgctgt acaccagcc 120
cccagcacag cgctgttcca ggacaagtgc ccagtaaaaca cttgggaagc aatgcaagcg 180
tctctccagc agctcctgca aacagacccc cgacccaagc ctttctctct gcctccactg 240
ccaccactgc tgetcatctc tgetggcaca gaagtctctt ccctgggtct ccagaaatcc 300
cctctccaca ctacagccaga gggagctatt aaaactgcgg gccagccac atcagtccac 360
agcaaagtcc tctctaaggg atctctgttg cttggagaat aaacctctcg attccttctt 420
tggctctcgg ggctctctct ctgacctccc tctgtctctt ctcccagcct tctcctcac 480
tcacccctca gccatgctgg ctctctctt gctcctgaaa cagcctgaga gccacactgc 540
cccgggccct ttgcaactgg tgttctctct gcctggagca cttctcttag gcacccacag 600
ggctccctcc cacaactcct tgggtgcccc acatgggaag ccatccctga ccacccccc 660
gaattctctc tgagcaaggt agggctcttc tacctagtca tgagggcagg gatttttgtc 720
tgtgtgttc tctgtgtgcc ccagtgcca tccagtgcc tggcagatgg taagtgtctg 780

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acacacattg gctgactgcc tgaatgaaca actctatgag ccgatggcag ataaggacac 840
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ggagaggagc ccgggttggg caccatctgg agttggcgtc ttggaaactg catcaggaga 960
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&lt;210&gt; 245

&lt;211&gt; 918

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;223&gt; Incyte Clone No: 3836893

&lt;400&gt; 245

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ctgggtcaca ggaaggatga ggaagaccag gctctggggg ctgctgtgga tgctcttctg 120
ctcagaactc cgagctgcaa ctaaattaac tgaggaaaag tatgaactga aagaggggca 180
gaccctggat gtgaaatgtg actacacgct agagaagtct gccagcagcc agaaagcttg 240
gcagataata agggacggag agatgcccga gaccctggca tgcacagaga ggccttcaaa 300
gaattcccat ccagtcctaa tggggaggat catactagaa gactaccatg atcatggttt 360
actgcgcgtc cgaatgggca accttcaagt ggaagattct ggaactgtatc agtgtgtgat 420
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accagctaaa aaaaaaaaa
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918

&lt;210&gt; 246

&lt;211&gt; 676

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;223&gt; Incyte Clone No: 4072159

&lt;400&gt; 246

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gctcacacag ctcccgcca ggtcaccgc catggtctc cctctgccct ggctctctcg 60
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tgaagagttg ttggagcagc agctggagct gtaccaggcc ctccctgaag ggccaggagg 300  
agcctggggg gcccaagccc tgggtgctcaa gatccagaag ctgaaggaaac agatgaggag 360  
gcaccaagag agccttggag gaggcgcccta agtttccccc agtgcccaca gcaccctccg 420  
gcactgaaaa tacacgcacc acccaccagg agccttggga tcataaacac cccagcgtct 480  
tcccaggcca gagaaagtgg aagagaccac aaaccgcagg caattggcag gcagtggggg 540  
agccagggct ctgcagctct agtcccattc ccttttgatc tcacagcagg caggggacca 600  
caggccttac taggaattca ccctggacca tgcctaaaaa taacctcacc ccaaatacaa 660  
taaagggaagc aggcaa 676

&lt;210&gt; 247

&lt;211&gt; 2255

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;223&gt; Incyte Clone No: 1003916

&lt;400&gt; 247

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gaaagaggag ggccggggcag cggaggggag gaggcggtgc gtgcctcgcc tgccaaaggg 120  
agatccgctc ctctgcgtgc gatccccggc gcccgcccgc gccacagcg ctccgccaga 180  
gtcgcggcgg cggactcgcc gggagtgggg gctcccgctg gtgccagccc gcttctggag 240  
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tagggacaga ggcaagaag ggcaggacgg tccggtttcc cgtggatgtt cccgcccag 360  
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gccatggacc atcatcttta gtgcagagga tggaaagtgt atgcccagta agactgaaga 480  
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gggggaaaaa aaaggagagt atagaatgat ggagaaaaat ggaccaaagg ctaaaaatat 1440  
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gccaaactat cagtattttg tatatcctgc ataaactcta atttagtcc tcaacatatt 1920  
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tgcaatattt ctctgagtag cttctgctat gatattctta tgaagaaaag gggcaacttt 2040



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ctgtccacta taggagagaa ttcagccgaa gatattgagag taatgagaga ctttttccag 2100
tcattggatc gtgttttctt ttgtccatta ttgtactgtg ctgtaccaca ttattttcta 2160
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<210> 248  
<211> 1223  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc\_feature  
<223> Incyte Clone No: 2093492

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agggcatttt cccagcggcg ctgctgcccc tggtgtgac catgattctt ttccctgggc 180
cactgatgca gctctctatg gattgcctt gtgacctggc agatgggctg aagggtgtcc 240
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ccaggagcca cacactccct tcctcacttt ggaactgtgc ttctcttagc tcctctgctc 1080
ctgaaaagct gctcggggtt ttttatttat aaaacctctc cccaccccc acccccaac 1140
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ttaacttggg taaaaaaaaa aaa 1223
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<210> 249  
<211> 1188  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc\_feature  
<223> Incyte Clone No: 2108789

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<400> 249
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gttttggaaa actggtgtgt accgaggcgc tgactgcacg gctgaccgac tgctcgtgac 180
ttcattctgc agcggcatgg tcctcccat tctggtcca cctgcagccc cctgggtgg 240
cctaggctcc cccgaccaag agacctccct ctcatgatca ctggtacctg ggggcctgaa 300
ttctggcccc cggtcccca cacagctggg actggcctgg atggtgtgac tggtagcccc 360
tgccccacct gacagaggga gctgggcctc cctcactcct ctgtaactcc cgccttcacc 420
agactcgagg acacctggc cctgctgagg catacagagc ttcagcccag cacagaagca 480
```

```
agacaaaatc agtggctctt agagttaga aaacaagaca gactctcaga tgaagatct 540
gacaagcacc gtggccagtc acagggagag acttgatgtc tggccttcta attcctcctc 600
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caggggacaga cccccaccc ccaaggctgc agccacacca tgtttcaggc ttggggctgg 720
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ccaccttgcc cttgaaggat gggcctgctg cacgtctccc tctccaccc cataccacac 840
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caatcagtag cgagcagcgg ggcacacag accctcatgc actctctac gtgccattct 1020
ccccagactt tttttgact taatgtatga aagatccaaa ctaatatgac tgaataagg 1080
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tgtatagagc tgtgtataaa ctggatgtag aagcacaaaa aaaaaaaa 1188
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&lt;210&gt; 250

&lt;211&gt; 1792

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;223&gt; Incyte Clone No: 2171401

&lt;400&gt; 250

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cggactggcc tcccagcgt ggggcgacaa gctgcccggag ctgcaatggg ccgcggtctg 120
ggattcttgt ttggcctcct gggcgccgtg tggctgctca gctcgggcca cggagaggag 180
cagcccccg agacagcggc acagaggctc ttctgccagg ttagtggtta cttggatgat 240
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&lt;400&gt; 253

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&lt;210&gt; 256

&lt;211&gt; 1671

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&lt;213&gt; Homo sapiens

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&lt;223&gt; Incyte Clone No: 2383171

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&lt;210&gt; 257

&lt;211&gt; 792

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;223&gt; Incyte Clone No: 2396046

&lt;400&gt; 257

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&lt;211&gt; 672

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;223&gt; Incyte Clone No: 2493851

&lt;400&gt; 260

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&lt;223&gt; Incyte Clone No: 2495719

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<220>  
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 <223> Incyte Clone No: 2849906

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tctggtgggg acagggcccc tagtggggtg gcttcccca ggcccctgag aatcaggggt 780
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